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THE MEDICAL TREATMENT OF CANCER

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THE MEDICAL TREATMENT OF CANCER

BY
L. DUNCAN BULKLEY, A.M., M.D.
Senior Physician to the
New York Skin and Cancer Hospital, etc.

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To
THE GOVERNORS
of the
NEW YORK SKIN AND CANCER HOSPITAL
Whose kind appreciation of and assistance to the author
in his clinical work in their institution have
done much to encourage him and to
promote the interest of the pro-
fession in the branches of
DERMATOLOGY
and
CANCER
this volume is
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"MEDICINE TO SUPPLANT KNIFE."

New York Sun, November 17, 1918.

Dr. J. B. Murphy, of Chicago, Says 25 Years Will Find Drugs in Lead.

Chicago, Nov. 16.—Internal medicine will take precedence over surgery for the next twenty-five years, is the belief of Dr. John B. Murphy, one of the foremost surgeons of America. He expressed this view before the Congress of Clinical Surgeons, following his election as President of the organization.

"It is internal medicine," he said, "that goes into the details, and the advance in it in the next quarter century will be greater than the advance in surgery. If I were to start over again I would start in internal medicine, because its possibilities are unlimited."

Seeing the above in the morning paper, I sent it to Dr. Murphy and asked him if it was true, remarking that if it was so I wanted to congratulate him and humanity. His reply follows:

November 26, 1918.

Dr. L. Duncan Bulkley,
531 Madison Avenue, New York City.

Dear Doctor:

In reply to your letter of the 17th, I would say that the press report was correct as to the essential details. Internal medicine offers unquestionably greater opportunities to-day than does surgery, and if the same amount of labor, energy and skill were exercised in the internal medicine line as is exercised in surgery, I feel that greater results could be accomplished. I feel that internal medicine is a field for wholesale achievements, while surgery will of necessity always be retail work. Furthermore, a survey of the possibilities of the future in the way of diagnosis, early recognition and treatment should offer enormously more in the way of rewards to the people and the profession than the surgery of the next two decades, as far as we are able to judge from present viewpoints.

I wish to thank you for your letter and to say that it has been the work of many of your class that has stimulated me to greater endeavors and aided me in my work.

With expression of esteem and highest regard, I am, dear doctor,

Sincerely yours,
(Signed) J. B. Murphy.

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PREFACE

Cancer is still a pressing problem. According to the latest report of the Mortality Tables of the United States the death rate has continued to rise steadily and lamentably, in spite of assiduous and faithful work in the laboratories, and arduous and intelligent efforts of skilled surgeons, who have also made a strenuous propagandism in regard to the necessity of early and complete extirpation.

In my former volumes I have endeavored to present the reason why with this method of simply removing the products of the disease, the offending tumors, with the knife, we cannot expect to eradicate cancer which, as we know, affects the whole system, and in the end causes the death of ninety per cent. of those once attacked. It is understood that this does

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not refer to epithelioma of the cutaneous surface, but to true cancer, affecting internal organs.

In former volumes I have also endeavored, as far as possible, to present the medical aspects of cancer, the systemic conditions which are at fault, and the measures, dietary and other, whereby they can be corrected and the disease controlled, giving illustrative cases, out of many others, in which this has been followed by the disappearance of the offending tumor.

It is very satisfactory that the audiences of physicians whom I have addressed, and the medical journals, have received the new doctrine so favorably, and rarely have there been any adverse criticisms. Many letters have also come from physicians in this country and elsewhere, sustaining my claims and mentioning cases verifying the same. But the surgeons seem still to hold to their preconceived ideas. When the first volume ap-

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peared a surgeon remarked that so small a volume could not effect anything in changing the universal opinion in regard to cancer. I asked him if he had ever seen an acorn, and remarked that if I planted an acorn, and left it unprotected in an open field where there were some bulls I might not expect to grow an oak, but by hedging it around until the oak was fully grown, I should then expect the tree to take care of itself and be a blessing. It is gratifying to observe that this has in a measure happened, and that there is a widespread interest in the subject which has been so often presented, and a gradual acceptance, by many, of the principles involved. It takes time for all new ideas to be adopted, whether in medicine, science, mechanics, arts, or politics. A leading medical editor to whom I offered a rather radical article on cancer accepted it at once, adding in his letter, "It is hard to overthrow entrenched error with gentle words."

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As the journalistic reviews of my second little book have been so encouraging I venture to put forth another, a third acorn, in the hopes that it may excite further interest in this most important subject, and lead others to investigate the matter and to report their experience and cases along the lines indicated. I should also be glad of just criticisms on a scientific basis. It is not a little remarkable that during the past year or so there has been such a singular dearth of surgical articles on cancer, as a careful search of literature shows, and so many journal articles, editorial and other, looking toward the thoughts on cancer which I have endeavored to present. It is sincerely to be hoped that this ratio will increase more and more, and we shall soon see a radical diminution in the death rate of cancer, which is so longed for by all.

There are encouraging signs of this already, in the remarkable diminution of deaths from cancer in New York City, as

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shown in Chapter IV, on the cancer death rate there during 1918; there has also been a slight decline of the same throughout the United States in 1917.

Most of the material in this third volume on "The Medical Treatment of Cancer" has been delivered before different medical societies, in a number of the States in the Union, and much of it has already appeared in various medical journals. It has been thought best to collect it in one volume for reference, inasmuch as some subjects are considered which were not included in the former volumes, and certain subjects are developed more fully than was possible in the lectures composing the former volumes. These latter are necessary to a complete understanding of the facts concerning the metabolism and systemic changes in cancer, upon which the whole thesis is based. The bibliographical references to the names here mentioned appear at the end of the first volume.

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There will consequently be found in this volume considerable repetition of facts and figures previously given, which, however, may suffice to more fully impress those here and previously presented, and to lead to further thought and study of the important questions involved, as to "The real cancer problem" and the most satisfactory treatment of the disease, and its prevention. Some one has said that it was necessary to repeat a new idea five times. First, because one does not hear; second, because he gives no attention; third, because he does not understand; fourth, because he does not believe: So the fifth repetition is necessary in order to make a real and effectual impression.

L. DUNCAN BULKLEY.

JANUARY 1, 1919.
531 Madison Ave.

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CONTENTS

PAGE

PREFACE 7

CHAPTER I

A PLEA FOR THE RATIONAL TREATMENT OF CANCER 15

CHAPTER II

CANCER AS A NON-SURGICAL DISEASE . . 25

CHAPTER III

CANCER DEATH RATE IN NEW YORK CITY DURING 1917 41

CHAPTER IV

CANCER DEATH RATE IN NEW YORK CITY DURING 1918 49

CHAPTER V

CANCER FROM A MEDICAL STANDPOINT . . 53

CHAPTER VI

MEDICAL ASPECTS OF CANCER 71

CHAPTER VII

THE RELATION OF DIET TO CANCER . . . 121

CHAPTER VIII

DIETETIC AND MEDICAL TREATMENT OF CANCER . 144

Digitized by Google

CHAPTER IX

NON-SURGICAL TREATMENT OF CANCER . . . 169

CHAPTER X

PATHOLOGY OF CANCER 181

CHAPTER XI

MEDICAL TREATMENT OF CANCER 211

CHAPTER XII

PRECANCEROUS CONDITIONS 248

CHAPTER XIII

BODY ELIMINATION IN CANCER 262

CHAPTER XIV

CANCER AND CIVILIZATION 276

CHAPTER XV

CARCINOMA OF THE BUCCAL CAVITY . . . 289

CHAPTER XVI

WHAT SHOULD THE GENERAL PRACTITIONER DO ABOUT CANCER? 307

CHAPTER XVII

CONCLUSIONS AND RESULTS 321

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THE MEDICAL TREATMENT OF CANCER

CHAPTER I

A PLEA FOR THE RATIONAL TREATMENT OF CANCER

Many cases of undoubted cancer, both primary and recurrent after operation, are on record which have disappeared entirely and remained absent under a complete change of diet and mode of life, with more or less of proper medical treatment. Multitudes of cases are known everywhere in whom the disease has recurred, with terrible severity and death, even after the most complete removal, by the most competent surgeons, of very early lesions diagnosed as cancer, some of which proved to be only adenoma, microscopically.

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The enormous mass of laboratory studies which have been recorded has added thus far very little to our knowledge of the real nature and cause of cancer, and really nothing to treatment, except to advocate the surgeon's claim of the right to remove instantly everything suspected to be cancer or "precancerous"! Surgery has striven, more and more actively of late years, to stem the rising tide of mortality from cancer, but, alas! the Mortality Tables of the United States show the futility of this means, for the death rate from this disease has risen almost 30 per cent. from 1900 to 1917.

Laboratory researches have rendered, however, a valuable service in connection with cancer, by the negative results obtained, so that the ground is pretty well cleared for a proper understanding of the real nature and cause of the disease. Thus, all are pretty well agreed that cancer is *not* due to a parasite, *nor* contagious, that it is *not* strongly hereditary,

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nor due wholly to local irritant action, that it is *not* altogether a disease of old age, *nor* belonging to any particular occupation, and that it does *not* affect any special sex, race, or class of persons: cancer exists all over the earth, but with striking differences in frequency, according to certain peculiarities in diet and mode of living, associated with advancing civilization.

The exclusion of the various suspected causes of cancer by the prolonged study of many trained laboratory and other workers along the lines mentioned leads the thoughtful person to inquire if there is not still some line of possible etiology which has not yet been fully explored; for assuredly there is some actual, physical cause for the aberrant action of originally normal tissue cells, which we call cancer. There is nothing mysterious about the disease, except that thus far its real cause has eluded laboratory workers; but many clinical workers have long suspected and

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suggested one without much, if any, effect on the profession, so enamored has it become of surgery, and so insistent and loud have been the claims for a wholly local origin and nature of the disease.

But the failure of surgery to make any appreciable beneficial impression on the morbidity and mortality of cancer, as already mentioned, and the exclusion of all other possible causes, naturally leads us to look to a faulty metabolism, which has to do with such a multitude of other human ailments; and the deeper we search the laboratory and other studies which have been made regarding this, the more clear does it appear that it is along these lines we shall find the true means for the prevention and cure of cancer.

It is impossible in a brief article to present the evidence in which this statement is founded, which has been developed pretty fully elsewhere,* and it must suffice

* *Bulkley*—Cancer: its Cause and Treatment, Vols. I and II Hoeber, New York, 1915, 1917.

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to concisely state the principal points.

Cancer has been found definitely to increase with the spread of modern so-called civilization along the lines of luxury and attending indolence. This has been observed especially in the over-consumption of meat, coffee, and alcohol, as proven by statistics.

Many have recorded changes in the urine which indicate imperfect metabolism, especially of nitrogenous matter. Careful daily studies of the urine, both in the very earliest stages of cancer and late in the disease, show a very marked failure of elimination by this excretion, the solids being often not one-half of that called for by the body weight of the individual. Careful observation will also detect a great failure in intestinal elimination, in both the very early stages of the disease and all through its course. So true is this that Sir Arbuthnot Lane has declared that cancer may be one of the late results of intestinal stasis. This probably oper-

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ates through the poisonous action developed by the millions of micro-organisms formed in the large intestine, indican being not an infrequent urinary exhibit. It has been shown that cholesterin is also an important element in connection with the genesis of cancer, and there is strong evidence that derangement of the endocrinous glands is associated with the production of this disease.

It is quite true that the exact metabolic disturbances, or the actual blood state, inducing and perpetuating cancer, have not as yet been demonstrated, and perhaps they never will be. But it has also never been shown exactly how cancer begins, or when a benign tissue becomes malignant, as Ribert has said, "no one has ever seen the beginnings of mammary cancer": both aspects of the question, the constitutional and the local, rest on clinical grounds, and not a shadow of proof has ever been presented that the lump which we call cancer is purely local in character.

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On the other hand, the constant tendency to a recurrence of the disease in the same or other locations, even after the most complete removal of the local lesion and surroundings, and the continued depression of vitality and degeneration of the blood, all point to something more than a local disease; they all show a constitutional cause which induced the original stasis and degenerative action of tissue in some particular locality which was unduly irritated, probably the site of an "embryonic rest," that is, a heterologous tissue ready to revert to reproductive life. This latter would seem to be the starting point, inasmuch as the tissues in general of cancerous subjects heal kindly, and, after injury on various portions of the body, there is little or no tendency to tumor formation.

Even the occurrence of metastases accords also with the view of a constitutional disorder. For after surgical operation the patient is invariably left uncared

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for, as far as any attempt to alter the dyscrasic condition which engendered the disease, and very naturally the transference of cancerous elements by the blood or lymph stream produces a local condition which the vitiated blood current develops into a fresh local lesion.

The apathy of surgeons to medical suggestions of their own distinguished members, past and present, is very surprising, but not less so than the practical disregard of cancer by physicians. One finds the strongest expressions in regard to the constitutional relations of cancer by Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Esmarck, Sir Arbuthnot Lane, and others; and finally Dr. William J. Mayo, in his recent president's address before the American Surgical Association, asks, "Is it not possible, therefore, that there is something in the habits of civilized man, in the cooking or other preparation of his food, which acts to produce the precancerous condition?"

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And yet there has been relatively little serious attempt to investigate this line of thought or to test the principles underlying the metabolic theory of cancer, in its relation to diet and mode of life, as influenced by so-called civilization. While the microscope and laboratory work on animals have undoubtedly advanced the science of medicine prodigiously, they seem to have reached their limit in regard to cancer. Their negative conclusions, however, have paved the way for the medical man, through clinical study and physiological chemistry, to reach the real basic cause of the disease in the activities of the system as a whole, as influenced by diet and mode of life.

This plea is made, therefore, with the hope that the matter may be thoroughly investigated and tested, and that it may result in a more rational treatment than the present one of attempting only to remove the *product of the disease,* the local tumor, while the cause of the formation

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of the malgrowth remains still active. Only by a rational treatment of the cause can we hope to restrain the steady increase of cancer, and to reduce its frightful mortality of 90 per cent. of those whom it has once attacked.

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CHAPTER II

CANCER AS A NON-SURGICAL DISEASE*

Cancer is not a surgical disease, although of late years cases of this nature have been almost always relegated to the surgeon. It is true that the *local results* of the cancerous process can be removed by surgical measures, and that the wound may heal primarily and that in some proportion of instances the tissues may remain sound. But the experience of all has shown that the mere removal of the cancerous tumor and adjoining tissues surgically does not insure that the disease will not return in or near the scar, or elsewhere. It is now recognized and acknowledged that somewhere about 90 per cent. of those once affected with cancer

* Read at the Annual Meeting of the Medical Society of the State of New York, at Saratoga Springs, May 17, 1916.

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die from that malady. Surgery as a cure for cancer has been tried in the balance and found wanting, since under its supervision and treatment the death rate has increased to a lamentable degree of late years.

According to the United States Mortality Reports, the deaths from cancer under surgical control, have *increased* steadily and alarmingly since 1900, when they were 63 per 100,000 of the population, to 79.4 per 100,000 in 1914, or over 25 per cent. During the same period the mortality from tuberculosis, under intelligent medical supervision, has *diminished* from 201.9 to 146.8 per 100,000, or over 27 per cent., making an actual difference of over 50 per cent. in their relative mortality since 1900. At this rate the deaths from cancer will outstrip those of tuberculosis in fourteen years more. Is it not time for us to seriously consider whether the present attitude toward cancer is correct or not?

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It is understood that the present inquiry relates to cancer as a disease affecting many different organs; epithelioma of the skin is left practically out of consideration, as it is a relatively mild affair, when properly treated; it caused a comparatively insignificant proportion of the deaths from cancer, 2.7 per 100,000 population, which rate has increased only in a trifling degree since 1900. And yet many of the arguments presented in the recent surgical propaganda as to the control of cancer relate to the early surgical treatment of this epithelial disease of the skin!

No one has ever seen absolutely the first beginning of an internal cancer, and we have no knowledge as to exactly how the process starts; although microscopic research on cutaneous cancer has revealed much concerning the early changes occurring in tissue cells in this disease.

But the laboratory has not told us wherein lies the malignity of the true dis-

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ease which ultimately destroys so many lives, why cells which were once normal take such a morbid, uncontrollable and even rampant action that they can invade and destroy adjoining and distant tissues. We shall see later that the hypothesis of a purely local origin and nature of cancer is quite untenable in the light of modern investigation and thought.

The laboratory, however, both in a negative and positive manner, has done much to clear up our field of vision, and to open the way for a correct understanding of the cancerous process. Time does not admit of even a brief survey of the enormous work which has been done on cancer by thousands of earnest and honest workers in laboratories, at a vast expenditure of time, money, and animal lives; but a concise statement of the status of certain questions regarding the etiology of the disease will assist us in properly appreciating the medical aspects of the subject. As just suggested, the points thus

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far acknowledged by those who have most deeply studied cancer are both negative and positive, and may be mentioned under these heads:

1. Clinically and experimentally cancer is shown to be *not* contagious or infectious; although under just the right conditions certain malignant new growths can be inoculated in some animals, but human cancer cannot be transplanted.

2. Although micro-organisms of many kinds have often been found and claimed as the cause of cancer, there has been no concurrence of opinion in regard to them, and it is now pretty conclusively agreed that cancer is *not* caused by a micro-organism or parasite.

3. Cancer is *not* wholly a result of traumatism, although local injury may have much to do with its development in some particular locality, even as in connection with late lesions of syphilis.

4. Cancer is *not* hereditary in any appreciable degree; although some tendency

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in that direction has been demonstrated in certain strains of mice.

5. Occupation has *not* any very great influence on the occurrence of cancer; although it is more frequent in some pursuits than in others.

6. Cancer is *not* altogether a disease of older years; although its occurrence is decidedly influenced by advancing age.

7. It does *not* especially belong to or affect any particular sex, race, or class of persons.

8. Cancer is *not* confined to any location or section of the earth, but has been observed in all countries and climates.

But while laboratory and other investigations have not demonstrated any single cause of cancer and have yielded only *negative results,* they have, by elimination, cleared the way for a study of its cause along other lines, which are bright with promise. They have also established certain facts which confirm the views which from time to time have been briefly

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expressed by many who were best acquainted with cancer; namely, that, because of its constant recurrence, and from the failure of surgery to check its rising mortality, it must be of a constitutional nature, intimately associated with dietary or nutritional elements, as I have elsewhere shown.

The *positive* results of laboratory investigation are more encouraging:

1. We know now that the local mass, which we call cancer, represents but a deviation from the normal life and action of the ordinary cells of the body. These once normal cells for some as yet unexplained reason, take on an abnormal or morbid action, with a continued tendency to malignancy, which invades and destroys contiguous tissue, and is associated with a progressive anemia which destroys life.

2. Microscopic study has shown that there is a certain change in the polarity of cells about to be cancer-genetic, with an altered relation of the centrosome to

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the nucleus. These changes are again attributed to an alteration in the enzyme contained in the cell, which further depends on the nutrition of the cell as influenced by a faulty metabolism of food elements.

3. The exclusion of all other possible causes leads us naturally to look to a disordered metabolism as a cause of the disturbed action of the hitherto normal cells; and we find much to confirm this view both in laboratory studies on the biochemistry of cancer, and also in clinical and statistical observations.

4. The blood in advancing cancer has repeatedly been shown to exhibit many manifest changes, which indicate vital alteration in the action of the organs which form blood and so control the nutrition of the body and its cells.

5. Laboratory and clinical evidence demonstrate that the secretions and excretions of the body, both in early and late stages of cancer, exhibit departures from normal

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which deserve consideration. Although none of these have as yet been established as pathognomonic of cancer, they indicate metabolic disturbances which influence the nutrition of the cellular elements, and so these secretory and excretory disturbances are of importance in connection with its causation.

6. As all healthy cells of the body, by their catabolism and anabolism contribute a hormone or something to the general circulation, so experimental evidence shows that the cells of a cancer mass itself, when fully developed, secrete a hormone or something which is poisonous to animals, and which probably hastens the lethal progress of the disease.

7. Repeated laboratory experiences have demonstrated, in a most remarkable manner, the absolute controlling effect of diet on the development of inoculated cancer in mice and rats, so that the process was inhibited almost entirely with certain vegetable feedings.

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8. We thus see that as the laboratory has eliminated the local nature of cancer, it has also, in a measure, established the fact that there are medical aspects of the disease which further studies will show to be of the utmost importance. These all tend to demonstrate its constitutional origin, that is, its relation to deranged metabolism, which is now recognized as the basis of so many diseases.

But clinical and statistical studies come in with overwhelming force to confirm the correctness of this position.

1. We have already seen that with utter medical neglect cancer mortality has steadily and greatly increased in the United States, of late years, in spite of the prodigious advances in surgery during the same time. We have seen also that tuberculosis, as a result of careful medical attention, has decreased in mortality, by an even greater percentage. The same is reported by reliable observers all over the civilized world.

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2. Any number of observers, in many lands, have recorded the almost entire absence of cancer among aborigines, living simple lives, largely vegetarian; they have also shown the definite increase in the disease, and in its mortality, in proportion to their adoption of the customs and diet of so-called modern civilization.

3. This increase of cancer seems to depend largely upon the altered conditions of life, particularly along the lines of self-indulgence in eating and drinking, and in indolence.

4. Statistics from many countries show that increase in the consumption of meat, coffee, and alcoholic beverages, appears to be co-incident with a very great and proportionately greater augmentation of the mortality from cancer.

5. Clinical observation has time and again shown the effect of specific nerve strain and shock in the development of cancer; and there seems to be little question but that the enormous nerve strain

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of modern life is an element of importance in this direction, both through metabolic disturbance, and by direct action on living cells.

6. At present no clear demonstration is possible of the direct method by which errors of metabolism effect the changes in cells to which we give the name malignant, any more than we know how other alterations in the body are produced, such as arterial degeneration, bone changes, obesity, etc., which are recognized as due to metabolic derangement.

7. The results which have been observed in connection with the starvation of cancer, by ligature of vessels, illustrate the relation of the blood supply to growing cancer.

8. Finally, the repeated observation and report of the spontaneous disappearance of cancer, by careful and competent medical men, shows that conditions of the system may arise which are antagonistic to malignant growth, even when it has begun

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to take place; just as there are other conditions of the system which favor aberrant action of previously normal cells, resulting in cancer.

The medical aspects of cancer thus appear in quite a different light from that in which they have been commonly viewed. We now begin to see some of the reasons why cancer is not primarily a surgical disease, and some of the lines along which observation and investigation should proceed, namely, biochemistry, secretory and excretory derangements, metabolic disturbances, diet, etc., etc. The subject is too new a one to afford a great amount of corroborative proof at present, other than the long personal experience of the writer and others, who have seen tumors disappear under means other than surgical, excluding also *x*-ray and radium. More clinical and laboratory studies of human beings are needed, and not only studies and experiments on animals, valuable as these have been in the advancement of

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medical science in connection with other diseases.

Time does not here permit of developing the lines of thought and practice along the dietary and medical treatment of cancer which can be successfully carried out in early cases, and which are of value in later stages, which have been presented elsewhere. The purpose of the present paper is to direct attention to the hitherto neglected medical aspects of cancer, and to present the evidences of the correctness of the thesis presented.

It is fully recognized that the almost universal opinion of the profession and the public favors only a surgical aspect and treatment of cancer, and it is difficult to make headway against such odds. It is also fully recognized that there is a certain danger in advocating a dietary and medical control of cancer, lest, if this is not properly and efficiently understood and carried out, failure to control the disease may result and thereby time may be lost

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in which a surgical operation might possibly be of some service. But after many years of observation and practice along these lines, together with much study in later years, I feel constrained to urge upon the profession views which are contrary to those which are accepted by so many, who perhaps have never had their attention seriously turned in this direction before.

There is not time to enter into details concerning the dietary and medical treatment of cancer, which have been presented elsewhere. I must only remind you that to carry out this line of treatment successfully requires infinite patience and the application of the greatest diligence in studying and understanding the exact condition of the patient, and meeting every possible departure from health, and rectifying every derangement of metabolism.

I cannot do better in closing than to remind you that the medical aspect of cancer is not an absolutely new proposition,

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although it has never before been presented in a definite and concrete manner. Literature is full of allusions to the subject, without any attempt to fully discuss it, and many of the strongest surgeons have expressed themselves convinced of the constitutional, and largely dietary, origin of the local lesion which we call cancer. This view finds abundant support in the writings of Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Sir Arbuthnot Lane, and quite recently has been advanced by Dr. William J. Mayo and many others. Is it not, therefore, high time that serious attention be directed away from the purely surgical treatment of a *symptom* or *result* of a great disease, and that careful inquiry should be made into the underlying causes which ultimately result in such a great relative mortality, approaching 90 per cent. of all those affected, exceeding that of any other one disease?

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CHAPTER III

CANCER DEATH RATE IN NEW YORK CITY DURING 1917

In 1914 the New York Board of Health in its Monthly Bulletin for April presented a long article from the American Society for the Control of Cancer on "Cancer as a Public Health Problem." From this some data may be quoted.

Based on the statistics from the United States Registration area up to 1912, it showed very clearly and indisputably the steady and great increase in the mortality from cancer from the year 1900, when it was 63 per 100,000 to 77 per 100,000 in 1912, or 22.22 per cent. In New York State the increase had been from 66 in 1900 to 86.5 per 100,000 in 1913, or over 30 per cent. In New York City it had risen from

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63.3 in 1898 to 81.7 per 100,000 in 1913, or over 29 per cent. Throughout the world the cancer death rate from 1900 to 1909 had advanced, on an average of all countries reporting, 23.3 per cent. Cancer was rightly spoken of as "a menace to society."

The question of the apparent or real increase in mortality was discussed, and it was remarked that "it seems unlikely that accuracy of diagnosis has advanced at such an even rate as to result in almost exactly the same addition to the recorded cancer death rate each year."

Since 1914, when there was started the active propaganda for the more radical surgical treatment of cancer, the increase in the death rate has been much greater than before that time. Thus in the United States the mortality figure has steadily risen, so that in 1915 it was 81.1 per 100,000, or a total rise of 28.7 per cent., since 1900. In 1916 it was 81.8 per 100,000, or 29.84 per cent. increase since 1900.

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It is a little interesting to note that during the five years immediately preceding 1915, at which date surgery became more active, the mortality rose only from 76.2 to 79.4, a total of 3.2 deaths per 100,000 population, or much less than one per year; while in 1915, after the vigorous educational and surgical propaganda, the death rate rose from 79.4 in 1914 to 81.1 per 100,000, or 1.7 more deaths per 100,000 population in a single year; this is an increase of 2.13 per cent., more than double that in the preceding years. Could this be ascribed to more accurate diagnosis?

A confirmation of the reality of the increase in deaths from cancer happens to come in the Bulletin of the North Dakota State Board of Health for October, 1917. In it we find a quarterly mortality summary of all the deaths during July, August and September, 1917, with a column comparing these with the data of 1916. We find that while the general death rate, partly or wholly due to increase of popu-

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lation, had risen 22 per cent., the increase in the cancer death rate had increased 30 per cent.—from more accurate diagnosis?

Turning now to the mortality from cancer, in New York City, in 1917, as shown in the Weekly Bulletin of the New York Board of Health, we find that there were 4,859 deaths recorded from cancer, malignant tumor, 2,143 males and 2,716 females. This total number divided by 365 gives 13.33 persons dying daily from this cause. During 1916 there were 4,635 deaths from cancer, or 12.68 persons per day.

During 1917 there was a total of 78,467 deaths from all causes in Greater New York against 77,948 in 1916, an increase of 519, or less than *one* per cent.; whereas the increase in cancer deaths was 224 or almost *five* per cent. Surely such figures, which cannot lie, and which show an increase of cancer mortality nearly five times that from general causes, cannot be explained away by greater accuracy of diag-

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nosis or more perfect recording of death certificates.

In all this study of mortality statistics it is well to remember that these figures do not necessarily represent truly the real increase of cancer as a disease, which is probably even much greater than the figures show. For undoubtedly many cancer patients die of intercurrent diseases, under which the death is recorded, and in many instances the diagnosis of cancer is withheld from the death certificate for personal or family reasons.

The alarming increase in the death rate from cancer under surgical care may well be compared with the notable and steady decrease in the deaths from tuberculosis under rational and careful medical supervision and treatment. In 1900 the death rate from tuberculosis, in the United States Registration area, was 201.9 persons in each 100,000 population, and by 1916 it had fallen to 141.6 or a decrease of 60.3 persons in 100,000, or almost 30 per cent.;

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whereas during the same period the death rate of cancer had risen 29.84 per cent.! In 1900 the two diseases were 138.9 points apart in mortality, and in 1916 only 59.8 apart; at this rate of increase and decrease cancer will soon claim more victims in each 100,000 population than tuberculosis.

In the light of what has preceded is it not possible that there is something wrong in our conception of cancer and its treatment, as I have repeatedly endeavored to show? If any other disease presented such a steady and alarming rise in its death rate would we not stop and consider if our treatment were the best possible? If, with the introduction of antitoxin, the mortality from diphtheria had steadily risen until it was 90 per cent. of all cases, which is the acknowledged ultimate death rate of cancer, would we persist in employing it? And yet the profession and laity go blindly on with the idea that surgery offers the best and only hope of reaching cancer, by removing a local lesion which is only the

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product of a previous constitutional departure from health. As well might one excise a syphilitic gumma, or a tuberculosis lesion, or amputate a gouty toe, without other treatment, and hope that there would be no further trouble; for all experience shows that cancer is exceedingly prone to manifest itself anew, either in the same location or elsewhere.

It is a curious comment on human credulity that with this steady rise in its mortality so many should have accepted the dictum that cancer was only a surgical disease, and reached only by surgical measures, when all along the past one hundred years single voices of surgeons and medical men have now and again spoken so strongly in favor of its constitutional origin, as I have shown in my first volume. The lure of surgery is strong, and surgeons have made great claims, while medical men have not yet reported any single specific for the disease, for the single reason that no specific will ever be found.

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It is not the purpose of the present writing to enter upon the proof of the constitutional nature of cancer and its successful treatment by other than surgical measures, which have been abundantly considered in the books referred to. It can, however, be truthfully claimed that under proper and prolonged medical treatment more can be effected than with the knife. Not only is the death rate smaller, but the ultimate suffering is less. Moreover, with the fear of an operation removed, together with the known uncertainty as to the ultimate result, patients would be more inclined to seek aid in the earlier stages of the disease, when the prospects of overcoming it are better.

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CHAPTER IV

CANCER DEATH RATE IN NEW YORK CITY DURING 1918

Mortality statistics are an interesting and instructive study in their relation to therapeusis, as all recognize. For if a new remedy or course of treatment for any disease were introduced and year by year the death rate from that disease was shown to rise, eager search would be made for other remedies or measures to check the same. Years ago tuberculosis was called the great white plague, increasing in mortality so greatly that fear was excited that it would sweep off nations; but we know now that with well directed medical care its death rate has diminished thirty per cent. since 1900 in the United States. Syphilis, the great black plague, swept through Europe and elsewhere in

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the 16th and 17th centuries, whole towns and communities being infected, often quite innocently, until the proper use of mercury with the recent introduction of Salvarsan has largely rid the world of the fear of this foul disease. Leprosy was once alarming, but under wise management and the knowledge of its non-contagiousness it has lost much of its terrors. Yellow fever and cholera no longer threaten regions where scientific medical activity controls. But our recent experience with poliomyelitis and the Spanish grip show that there is yet much for the medical profession to investigate and conquer.

Cancer, the great red plague, still holds its own as a menace to civilization, for the United States Mortality Tables show that since 1900 its death rate has risen nearly 30 per cent., almost as much as that of tuberculosis has fallen; and it is commonly asserted that 90 per cent. of those once affected die from the disease, under

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the prevailing treatment. It is certainly time to consider well what should be done to check this fearful mortality.

But the death rate from Cancer in New York City, during the past year 1918, seems to show that wiser counsels are beginning to prevail, as appears from the weekly reports of the New York Department of Health.

During 1916, as previously reported, there were 4635 deaths from cancer, malignant tumor (an average of 12.68 persons daily) while during 1917 there were 4859 deaths, 2143 males and 2716 females (an average of 13.31 persons daily) an excess of 224, that is almost *five* per cent. increase: whereas the increase in deaths from all causes was only 519, or less than *one* per cent.

During 1918 there were 4895 deaths from cancer, 2150 males and 2745 females, (an average of 13.39 persons daily), or an increase of only 36 deaths over last year: that is, less than *one* per cent., as

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against a *five* per cent. increase of 224 for last year, 1917, over the preceding year, 1916.

If figures teach anything they seem to show that in New York City the profession is beginning to learn that the heretofore rash attempt to cure cancer with the knife is giving way to wiser procedures.

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CHAPTER V

CANCER FROM A MEDICAL STANDPOINT.*

In his excellent address Dr. Bloodgood has presented most ably the surgical aspects of the control of cancer, and I can concur with pleasure in every word he has said. I only regret that time did not allow him to show all of his pictures, that you might better understand the different phases of cancer, and better appreciate the disease with which we have to deal, which kills 75,000 persons in the United States yearly, with an acknowledged ultimate mortality of about 90 per cent. from it, of all who are once attacked. He has warned you of the danger of delay in attending to the disease, and urged early

* Address before the Medical Society of the State of New York, Eighth District Branch, September 22, 1915.

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and complete surgical removal, which is certainly most wise when such measures are decided on.

But, gentlemen, did you notice the figures which Dr. Bloodgood gave in regard to the end results of the surgical control of cancer? He stated that one-half, or 50 per cent. of all cases of cancer are inoperable when they are seen by the surgeons! Did you notice that of the other, operable one-half, not over 25 per cent. ultimately recover and remained permanently well, under the best surgery? Adding these figures together we have 87½ per cent. of all cases of cancer, in different locations which are not reached by surgery, but which succumb to the disease! Did you notice also that he said that the percentage of cures mentioned related to the "best surgery," from which one must infer that the mass of cases under ordinary surgery would show a still smaller ratio of cures: for relatively few of the 200,000 continually existing

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cancer patients can afford to go to such brilliant operators as the Mayos or Dr. Bloodgood.

What then of the other 87½ per cent. of cases for which surgery offers no hope? Are they to be left to struggle unaided against the dire disease, until relieved by death? I have frequently protested against the course which is usually followed in regard to cancer, both before and after operation. With a rather extended experience during the last forty years and more, I have rarely if ever found a patient with cancer who has received adequate and continuous care before operation, with a view of discovering and rectifying the cause of the morbid growth. Too often when a cancer is suspected or discovered it is regarded as a foregone conclusion that the malady is hopeless, except as the *results of the disease,* that is, the new growth, may be removed by the knife, *x*-ray, radium, caustics, etc., only too often to recur. And after a

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surgical operation, as far as my observation goes, the patients are invariably left entirely to their own resources, with the hope, alas, too often futile, that the tumor will not regrow, but with no attempt to so guide the life that there shall not be the same tendency to a recurrent malignant new formation. I would like to ask if any one present has had a different experience, if so to kindly raise the hand. I wait for an answer: but as none comes I take it for granted that you all, as medical men, follow the general custom of turning over all cancer cases to the surgeon or to the undertaker.

And yet, gentlemen, after many years of study, observation, and experience, I believe that the present, common attitude toward cancer, is all wrong, and that while surgery may always have its function to perform, in removing certain obnoxious products of the disease, more or less efficiently, curing some patients and prolonging the life of others, it can never

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hope to lessen greatly the morbidity of cancer. I believe, however, that its morbidity and mortality can be materially diminished if intelligent, serious, and prolonged attention is given to it from a medical standpoint, along metabolic lines, which line of thought finds abundant support both from laboratory work and from statistical teachings and clinical experience, all along the past years.

Time will not allow me to elaborate at all, as I would like to, the proof of my assertion, and I do not know how many of you will believe what I say. Dr. Park Lewis yesterday quoted an unknown writer who said that it is necessary to repeat a proposition five times to have it effective, for the reason that the first time one does not hear, the second he gives no attention, the third he does not understand, and the fourth he does not believe, so the fifth repetition is necessary. Unfortunately I can not repeat everything five times, so please believe at once, for

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what I am to say is vital and serious to the hosts of cancer sufferers, present or future; and I stake my reputation on the truth of it, which I believe will be widely accepted before long. As a basis for my thesis I beg you to look carefully at the wall chart before you, which is an exact copy of one in the volume of United States Mortality Statistics for 1913.*

This represents the recorded deaths, from several diseases, in the registration areas from 1900 to 1913. The upper red line shows that the mortality of all forms of tuberculosis has steadily fallen over 25 per cent. during that period. We further see that organic heart disease gives a constant rise in death rate, of from 15 to 20 per cent., nephritis nearly 15 per cent., and apoplexy over 10 per cent., while the deaths from cancer have coincidently increased from 63 to 78.9 per 100,000, or over 25 per cent.; in New York City there are twelve deaths from cancer

* This chart is now brought up to 1917.

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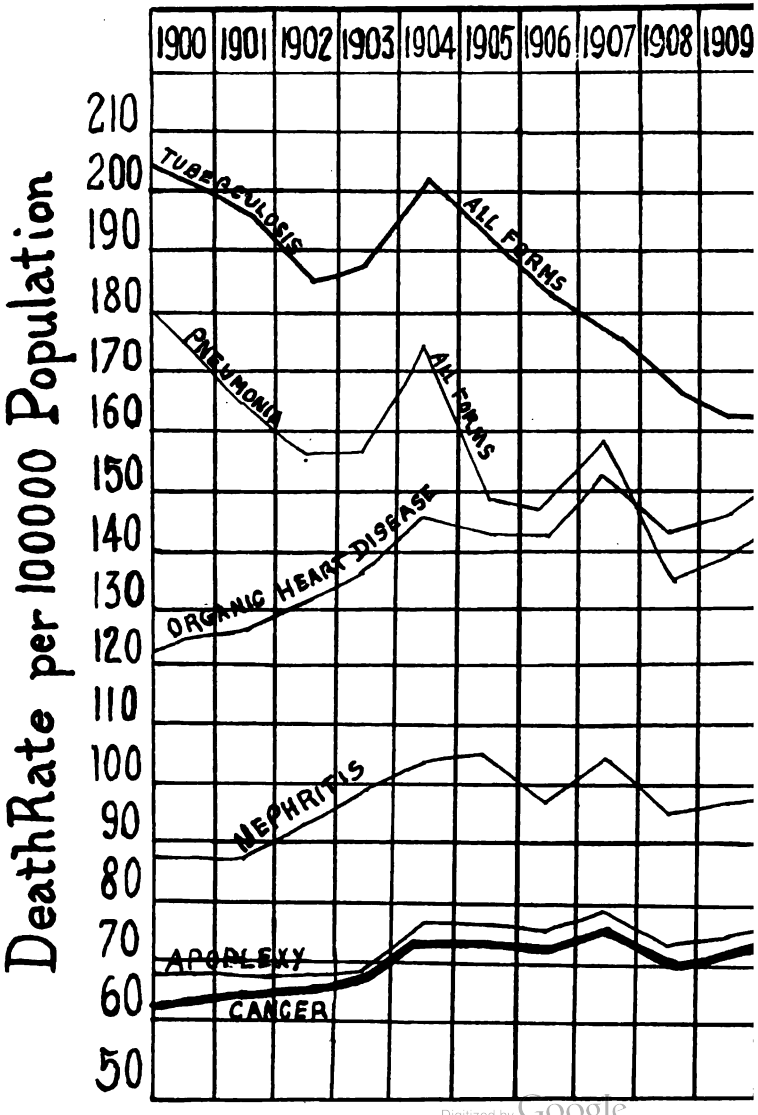
From United States Morta



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every day, according to the statistics of the Board of Health.

It is worth while to consider these figures seriously for a moment, and the lessons they teach us. The mortality from tuberculosis has declined over 25 per cent. in these thirteen years; how has this been accomplished? By the surgeons cutting out its lesions? Not at all, but by a steady, persistent, medical attention to the disease in all its aspects, and by the application of correct principles of living, largely dietetic; for, when we give the patients fresh air and sunlight we promote a proper metabolism, or nutrition, which enables the system to resist the still present bacillus of tuberculosis.

We have further seen from the chart that organic heart disease, nephritis, and apoplexy present a constantly rising mortality, and no one questions that they are due to errors in living, incident to modern civilization, especially along the lines of food and drink, with want of proper

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exercise to promote perfect metabolism and elimination.

Now cancer closely follows the same lines of increasing mortality, only it exceeds them all, it having risen over 25 per cent. in the same thirteen years; the death rate for 1913 was 78.9 per 100,000, the highest ever attained, in spite of ever increasing activity in the study of cancer, and transcendent zeal, intelligence, and skill in the surgeons, who are trying to control it.

I submit to you, gentlemen, if the argument does not seem overwhelming that cancer is no longer to be regarded as a purely local disease, but that, as its death rate rises coincidently with that of the other diseases mentioned, it must have a more or less similar cause; and with the utter failure of surgery to control its increase, we must look in some other direction for means to check its morbidity and mortality?

Time fails me to expound to you at all

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fully the line of argument supporting all this, which is based on published laboratory studies in the physiological chemistry and metabolism of cancer, as quoted in my little book on "Cancer, Its Cause and Treatment"; nor can I give more than a slight reference to the many expressions found in literature, by men well acquainted with cancer, who have clinically been impressed with the constitutional nature of the trouble, of which the local lesion, or cancer, is but a *result*. But that you may know that I am not alone in urging a medical consideration of cancer, I must very briefly refer to a few prominent names of those whose opinion should bear weight. Indeed, the more I study literature, new and old, the more I wonder that the valuable suggestions found there have not already directed serious attention to and investigation of this aspect of the disease, in place of the immense amount of labor and expense which has been given to laboratory studies with the

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microscope and test tube, and experiments on rats and mice!

Nearly 100 years ago the great Abernethy, in his "Surgical Observations on Tumors" wrote: "There can be no subject which I think more likely to interest the mind of the surgeon, than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings with it nothing but disgrace, if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance." Following down in time I have quoted from Walshe, Willard Parker, Sir Astley Cooper, Sir James Paget, Sir Arbuthnot Lane, and others, all of whom, often in very strong language, declare emphatically their belief in the constitutional nature of

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cancer, many of them attributing it to dietary errors.

The most recent supporters of this view are Dr. Wm. J. Mayo, who in his presidential address before the American Surgical Association alluded to the matter a number of times, in no uncertain language, and Dr. James Ewing of Cornell University, who in discussing the subject said to me, "Bulkley, I believe you are right, and our laboratory is now devoting itself to metabolic studies in cancer."

I wish that I could give you briefly my experience in following this line of thought and treatment in cancer cases in private practice, during more than thirty years, and in the New York Skin and Cancer Hospital more recently, upon the special request of the Board of Governors, but must refer you to what I have written on the subject. I may say in advance that I am not here to offer any special new form of treatment or any novel or certain cure for cancer. Sadly the rising

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mortality path of cancer is strewn with the wrecked hopes of multitudes of sufferers who have tried in vain the innumerable "Cancer Cures" brought forth and often vaunted loudly, both by those who were within and those outside of the regular medical profession. Personally I do not believe that any one remedy, whether it be a serum or a pharmaceutical combination, will ever be found which can be spoken of as a "cure for cancer," although some of them have, for a while, seemed to be of service. The reason for this belief is found in the true nature of the disease itself.

The basic cause of the nutritive disturbance which eventuates in the new growth which we call cancer, being a disordered metabolism, due to many causes, it seems entirely irrational to suppose that any brief course of medication by injection or otherwise, can alter the deranged metabolism, or affect the organs concerned in nutrition, in such a manner that they will permanently operate correctly if the

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dietetic or other errors which induced the malignant new growth are allowed to persist and perpetuate the disorder.

The real problem in regard to the prophylaxis and cure of cancer, therefore, relates to such a modification of the conditions of life as will induce a perfect blood stream which carries on a perfect anabolism and catabolism, resulting in the formation of normal body cells, in place of the heterologous cells of cancer.

Time does not permit of the elaboration of the subject as one could wish, but to make my position clear I must very briefly touch upon some of the principal points involved, which I have presented in my little book. I must first state that I quite agree that chronic irritation has much to do with the localization of the morbid growth, even as local injury will commonly induce the local manifestations of gout, rheumatism, and late syphilis. I also accept the view that probably the malignant growths of cancer take their

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origin in "embryonic rests," or wrongly placed epithelial elements. But repeated irritation occurs continually without causing cancer, and we are told that "embryonic rests" exist in every one, even in great numbers, while relatively few individuals are affected with cancer.

It would appear, therefore, that something more is necessary, and that is found in the soil in which the "embryonic rest" germinates, or rather in a vitiated blood stream, perverted by a deranged metabolism, which is again dependent upon the erroneous life induced by modern civilization. You all know, undoubtedly, that it has been pretty clearly shown that cancer is a disease of civilization, and that the morbidity and mortality of cancer have increased with its advance, and with its attendant evils of over-indulgence in eating and drinking, with indolence, nerve strain, etc.; these all help to pervert metabolism, and are more or less accountable for disease of the heart, kidneys, and brain,

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whose steadily rising mortality does not, however, keep pace with that of cancer.

You know also that the errors of diet lie largely along excess of animal protein, coffee, and alcohol, and that cancer mortality is the highest where the *per capita* consumption of these is greatest. You know likewise that cancer is exceedingly rare among herbivorous animals and aborigines who follow a diet largely composed of vegetables, fruits, and cereals; moreover laboratory studies have demonstrated that feeding has the greatest influence on the effect produced by the artificial inoculation of cancer in rats and mice, and that an absolute rice diet almost inhibits its development. The teaching of all this is that in the human being an absolute vegetarian diet plays a very important part both in the prophylaxis against cancer and in its treatment. with or without surgical operation.

But there are other elements connected with the production and control of cancer

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which must be very briefly alluded to, that you may fully appreciate cancer from a medical standpoint.

Proper and perfect elimination of the waste products of the body is the basis of all good health, and imperfect or deficient elimination is the source of innumerable ills to which different names are given; why the results are different in different individuals one does not know, and perhaps never will know, but careful clinical observation, both in recent and recurrent cancer, shows certain faulty conditions of elimination which are believed to be related to the etiological factors of the disease. These are exhibited in the excretion from the kidneys and the intestines. This is a very large subject, and time does not permit of more than the bare mention of the fact that cancer patients, even in the very early stages are almost uniformly constipated, and that a most careful and repeated volumetric analysis of the urine, in every possible particular, shows

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that it is rarely if ever that of health. This latter statement does not refer to the presence of albumen or sugar, which are seldom found, but to the many ingredients which represent the ultimate result of tissue metabolism.

The medical treatment of cancer, therefore, opens a very wide field of observation and study, and the applied therapeutics in different cases may vary very widely. But with the steady and persistent aim and effort to rectify metabolic errors, and properly correct disorders of elimination by diet, hygiene, and proper medication, I know that much impression can be made upon the morbidity and mortality of cancer, as I have witnessed in private practice for forty years, in large numbers of cases.

My time is up and I must stop; but I can not close without urging you to accept my views, so far at least as to study carefully your cancer patient from a medical standpoint, and not think that the only

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possible hope is in the surgical removal of the *product* or *result* of a systemic condition, which in the end carries off a very large proportion of its victims, under the prevailing views in regard to the disease. Remember also that the earlier, the more earnestly, faithfully and intelligently proper medical measures are carried out, the more hope and expectation there is of checking the disordered blood and cell action which so commonly eventuate in death.

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CHAPTER VI

MEDICAL ASPECTS OF CANCER*

In his recent president's address before the American Surgical Association, Dr. William J. Mayo spoke in regard to the internal causation of cancer in a manner which should attract serious attention. Few have had a wider acquaintance with the surgical aspects of the disease than he, and few others know better than he how relatively impotent surgical procedures are to stay the steadily increasing mortality from cancer, which now claims about 90 per cent. of those whom it once attacks.

As a text for what I have to say, I want to quote a few of his words, as they confirm so strongly the views I have held and by which I have practised for thirty years

* Address before the Rhode Island Medical Society, March 4, 1915.

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and more, with results which I have seldom, if ever, had cause to regret.

Speaking of the prophylaxis of cancer, mainly from its surgical aspects in regard to early operation, Dr. Mayo says: "Cancer of the stomach forms nearly one-third of all cancers of the human body. So far as I know this is not true of the lower animals, nor of uncivilized man. . . . Is it not possible, therefore, that there is something in the habits of civilized man, in the cooking or other preparation of his food, which acts to produce the precancerous condition? . . . Within the last 100 years four times as much meat is taken as before that time. If flesh foods are not fully broken up, decomposition results and active poisons are thrown into an organ not intended for their reception and which has not had time to adapt itself to the new function." In conclusion he says: "Where cancer in the human is frequent, a close study of the habits of civilized man as contrasted with primitive races and lower

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animals, where similar lesions are conspicuously rare, may be of value, and finally the prophylaxis of cancer depends, first, on a change in those cancer-producing habits, and second, on the early removal of all precancerous lesions and sources of chronic irritation."

I shall hope to show you that cancer is indeed a disease of modern civilization, like tuberculosis, although of quite a different nature, and that the increase in its prevalence and mortality has closely followed the habits of man, in regard to diet and mode of life, as influenced by so-called civilization. We shall see that as the death rate of tuberculosis has diminished, that of cancer has steadily increased, the one under improved nutrition, the other under excessive or erroneous nutrition.

It is strange that the medical profession has been so slow in accepting, or unwilling to accept and act upon the suggestions along this line which have been thrown out from time to time, for very many

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years, by surgeons of prominence, who were well acquainted with cancer, and who felt their inability to cope with this distressing and fatal disease. And yet innumerable, earnest, faithful, and intelligent research workers have expended any amount of time and labor, countless animal lives have been sacrificed, and vast sums of money have been spent in searching for the cause of malignant disease, with little if any but negative results; from the standpoint of laboratory investigations thus far a satisfactory answer as to the problem of cancer seems as distant as ever, with no practical suggestions in regard to the prevention and cure of the malady, except by local means, including surgery, *x*-ray, radium, etc.

From the surgical aspect the problem does not seem much brighter, as we shall see later. All honor to the surgeons who have so earnestly and valiantly striven to cure the disease by these means, but alas, their efforts have proved unavailing to

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check to any degree the constant rise in the general death rate from cancer, as shown by the mortality tables from many lands; and this is because the effort has not been along the right lines, as I shall hope to show.

I am well aware of the improvement in surgical statistics which has been reported in regard to cancer in certain localities during the last few years, and of the importance of very early operations, if good results are to be obtained; but I hope also to show that the same pertains to the dietetic and medical treatment of the disease. While operative procedures may remove the tumor, and with it the source of toxic material generated in the same, they do not in any way affect the primeval or basic cause of the trouble; whereas, if exactly the right measures are employed to reach the fundamental source of the difficulty, not only will the original new formation disappear but there will be little or no tendency to its recurrence. What these

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lines of causation are will appear later.

Dietetic and medical treatment of cancer, in the fullest sense, have never been given a fair and completely intelligent trial, on a scale large enough to produce general conviction in regard to their value and to lead to their general adoption. With a rather extended experience during the last forty years, I have rarely if ever found a patient with cancer who has received adequate and continuous medical care and treatment before operation, with a view of discovering and rectifying the cause of the morbid growth. Too often when a cancer is suspected or discovered it is taken as a foregone conclusion that the malady is hopeless, except as the *results of the disease,* that is the new growth, may be removed by the knife, *x*-ray, radium, caustics, etc.

Also after a surgical operation, as far as my observation goes, the patients are invariably left entirely to their own resources, with the hope, alas, too often futile, that the tumor will not regrow, but

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with no attempt to so guide the life that there shall not be the same tendency to a recurrent malignant new formation as before. Against this latter course I also raise my earnest protest.

That you may know that Dr. Mayo is not alone in his impressions that there is "something in the habits of civilized man . . . which acts to produce the precancerous condition," I must very briefly refer to some of the leading surgeons of the past who, from time to time, with more or less force, have claimed that the disease is constitutional, and that it depends largely on diet and mode of life: later I shall hope to present sound grounds for such belief.

One hundred years ago Lambe wrote clearly in regard to the causation of cancer from luxurious living, and adduced strong proof to show the effect of diet in curing certain cases of undoubted cancer of the breast and uterus.

Abernethy, shortly after, wrote pointedly regarding the constitutional origin of

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tumors, endorsing Lambe's dietetic treatment of cancer and presenting several reasons why it should be fairly tried.

Walshe in his classical work on cancer, says, "It would in theory appear that the removal of a tumor cannot in itself cure the disease, as the local formation is but a symptom of the general vice of the economy," and he alludes more or less to the effect of diet on the disease.

The late Willard Parker, one of New York's great surgeons, in a study of 397 cases of cancer of the breast, observed from 1830 to 1880, wrote very strongly in regard to the constitutional relations of cancer. In considering its etiology he places first "luxurious living and particularly excess in animal food." He says, "Cancer is to a great degree one of the final results of a long-continued course of error in diet, and a strict dietetic regimen is, therefore, the chief factor in the treatment, preventative and curative." He further says, "In regard to the effect of abstemiousness on can-

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cer I can speak with great positiveness, that vegetable, or at least a very bland diet, does check the progress of the disease, and in some cases now under treatment has been attended by an alleviation of symptoms; and in a few instances even by a recession of the growth."

Sir Astley Cooper is quoted by Dr. Parker in some strong language, as follows: "The cause of this disease is supposed to be some accidental blow or the pressure of a part of the dress; but although the blow may produce a swelling on the bosom, yet that swelling will not be of a schirrous nature unless some defective state of the constitution disposes to malignant action. If the constitution be good the effects of the blow are speedily dissipated: but if the constitution be faulty, the swelling grows into a formidable disease." Later we shall see what some of these constitutional conditions are which induce certain cells of the body to take on malignant action.

Sir James Paget, that prince of surgeons

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and pathologists, comes out very strongly for the constitutional origin of cancer when he says twice in his Lectures on Surgical Pathology that cancers are "local manifestations of certain specific morbid states of the blood"; and again, he says, "I believe it to be constitutional, in the sense of having its origin and chief support in the blood . . . the existence of the morbid material in the blood, whether in the rudimental or effective state, constitutes the general predisposition to cancer."

Benecke, in 1875, elaborated a diet highly beneficial in cancer, which was endorsed by Esmarck and Oldehop.

If time permitted I could give any amount of further corroborative evidence, in the way of scattered remarks and allusions, like those of Dr. Mayo, expressing the conviction of many others, that cancer is not a purely local affection, but is only the result of some previous systemic disturbance, which we now recognize as metabolic.

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But these many fugitive observations have never attracted the attention they deserve, and it would sometimes seem as if they were deliberately ignored, and that scientists and practitioners had combined to recognize only the local nature and treatment of cancer. The truth is that very little serious effort has ever been made to assemble all the evidence of the constitutional nature of the disease, and by synthesis and deduction to establish a basis for the recognition and treatment of the constitutional elements of cancer. While it has been impossible to gather all the proof that could be desired, I shall hope to give enough to establish the correctness of the basis of the thesis which I have long held.

Cancer is more or less widely diffused over the whole globe, but in singularly different degrees in various sections, and time will permit of only the briefest statement of the same, which can be verified and expanded from the remarkable recent works of Williams and Wolff.

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Thus in England cancer mortality is very high, and during the past 40 or 50 years it has increased four or five fold, while the population has only a little more than doubled. Switzerland is credited with having the highest death rate from cancer of any country, it having augmented from 114 per 100,000 living in 1889 to 132 in 1898. Denmark stands next with 130 per 100,000 living in 1900, and France has a high cancer mortality, with a constantly increasing death rate. In Paris it has increased from 84 per 100,000 living in 1865 to 120 in 1900. In Holland, the death rate from 1867-1879 was 49 per 100,000, and 101 in 1905.

The United States shows a lower death rate from cancer than the countries mentioned, namely 78.9 per 100,000 living in the registration area in 1913; but it had increased from 63 in 1900, over 25 per cent., while deaths from tuberculosis had fallen a little over 25 per cent.: in 1913 there were over 50,000 deaths from cancer in the

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United States. In a recent study regarding New York, Boston, Pittsburgh, Baltimore, Chicago, Philadelphia, and St. Louis, it was found that there had been an increase of almost 8 per cent. of deaths from cancer in their combined population in 1913, as compared with the average of the five years preceding.

I am quite aware that some have claimed that the increase of death from cancer is only apparent, and not real, and is accounted for by a greater longevity into the cancer age, by more accurate diagnosis, and by greater exactness in recording deaths. But these points have been carefully and satisfactorily refuted by Williams, and surely the increase of 8 per cent. in these seven cities could not be thus accounted for. In New York City, according to the Weekly Bulletins of the Board of Health, there were 2173 deaths from cancer in the six months from May to November, 1914, or almost twelve deaths daily from malignant disease.

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While cancer is steadily increasing everywhere, under the influence of modern civilization, there are certain sections where the mortality is much lower than has been mentioned.

Thus Italy has a low but increasing mortality, it having risen from 20 per 100,000 living in 1880 to 58 in 1905. Hungary had a cancer death rate of 26 in 1897 and 39 in 1903; in the county of Kerry, Ireland, the cancer death rate was 26 and in the province of Dalmatia 16 per 100,000 living population.

In some regions, however, cancer is very rare and in others almost unknown. In Africa all observers agree that the disease is exceedingly rare, as also among those in the interior of China and India; in Brazil it is seldom seen, while several testify that in many of the islands of the sea it is practically unknown.

During a rather extensive trip through the Far East I was unable to see or hear of any cancer, although I met a large num-

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ber of medical men, and made diligent inquiry regarding the same. I visited very many civil, military, and mission hospitals, with a total of many thousands of patients, and ministering to many millions of population: in Japan, Korea, China, the Philippines, India, Siam, and Egypt, I met the same response, that cancer was very rarely seen among the natives.

Now there must be some reason for this unequal distribution of cancer. Laboratory researches have not helped us in discovering it, except that they have done much to clear the way for a proper understanding of the real nature and cause of cancer, though the evidence furnished is largely of a negative character. In order to appreciate fully the basis on which our thesis rests, it will be well to state very briefly the accepted facts in regard to cancer.

1. Cancer is but a deviation from the normal life and action of certain of the ordinary cells of the body.

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2. It is possible that the diseased action may begin first in what is known as "embryonic rests," or prenatal, wrongly placed tissue elements.

3. Cancer is *not* wholly of traumatic origin.

4. It is *not* caused by a micro-organism, or parasite.

5. Cancer is *not* contagious.

6. Cancer is *not* hereditary in any appreciable degree.

7. Occupation has *not* any great influence on the occurrence of cancer.

8. Cancer is *not* altogether a disease of old age.

9. It does *not* especially belong to or affect any particular sex, race, or class of persons.

10. Cancer is *not* confined to any location or section of the earth.

11. *No* single cause of cancer has yet been demonstrated, nor is it likely that this will ever be the case, as the experimental

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and other investigations have covered almost every possible line of research, with only *negative* results.

But there must be some cause, or reason, why cancer is thus unevenly distributed and why it is so steadily increasing almost everywhere; why it is so exceedingly prevalent in some localities and among certain peoples, and again so rare or even absent among others; for we have seen that aborigines are not affected, while others, in proportion as they have been affected by so-called civilization are correspondingly affected. Wolff has shown in a remarkable table, that while cancer in the native Australians has remained about stationary, it has increased among the English residents in cities *seven fold,* and another writer remarks that while the native Australians are practically free from the disease, when they mingle with foreigners as servants and employees and adopt their diet and customs it occurs more frequently among them. The same has been observed

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among native Africans and those in India and elsewhere.

Analyzing the various data obtained, we find that cancer has increased in proportion to the consumption of the three articles, meat, coffee and tea, and alcohol.

In England, where the consumption of meat has doubled during the past 50 years and recently was 130 pounds per capita yearly, cancer mortality has increased *four fold.* In Italy, where the consumption of meat is the least of any of the European countries, cancer is least frequent, and in the county of Kerry, Ireland, where meat is seldom eaten, the death rate from cancer is not one-third that in England. The same comparison may be made between a number of other countries, did time permit. The United States in 1909 consumed much more meat than' England, namely 172 pounds per capita, and, as already stated, cancer has increased over 25 per cent. since 1900.

Alcohol must also be accredited with a

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portion of the increase of cancer in both these countries, as it is well known that the disease presents a far greater augmentation in those occupations where alcoholic drinks are indulged in, as in bartenders, printers, and others.

Coffee has been shown to have its largest per capita consumption in Holland, where the cancer death rate is among the highest, while Hungary is the smallest consumer of coffee, and the cancer mortality there is among the lowest, namely 39 per 100,000 living. The people of the United States consume one-third of all the coffee produced, more than Germany, Austria, Hungary, France, and the United Kingdom combined. England and her colonies, where cancer is steadily increasing, consume one-half of the world's output of tea.

Williams has given some interesting and important data regarding the effect of prosperity and wealth, leading to self-indulgence and indolence, in the augmentation of cancer mortality, which time does

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not permit our long dwelling upon. He shows clearly that as these elements of modern civilization have developed, cancer has surely increased, and he gives striking illustrations of the same. In England it was found in one decennium that cancer mortality was more than twice as great among well-to-do men, having no specific occupation, as among occupied males in general, the ratio being 96 to 44.

Nerve conditions have also been found by many to be an important element in the production of cancer, and the very great nervous strain accompanying modern civilization must be reckoned among its causative factors, possibly through its effect on metabolism.

To understand how these various elements mentioned, and probably others, have an influence in the genesis of cancer we must briefly consider the physiology of nutrition and the metabolism of cancer as far as it has been ascertained.

All recognize, of course, that the body

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nutrition, in health and disease, depends upon the nutritive elements taken into the system, as proteids, carbohydrates, and fats, with oxygen inhaled and water imbibed. We know, of course, that there is a certain equilibrium to be maintained in regard to its various component parts, and that over-indulgence in certain articles can without doubt produce disease as, for instance, acute or chronic gout from free indulgence in Port and Madeira wine. Just where the fault lies, and why after a certain time the system rebels and refuses to properly metabolize and remove waste products, or why the latter exert such a baneful influence on different portions of the economy, and give rise to various inflammations and misgrowths, is hard to tell, and must be the subject of future study, but the fact no thinking man can doubt. Later we shall hope to throw some little light upon it.

The metabolism of cancer has been the subject of considerable research, and there

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have been many reports in this direction which can be but briefly alluded to here; unfortunately, however, most of these investigations have been made upon advanced cases, where the system has been already depressed by the poisonous toxins produced in the already well-developed cancer mass, or where the disease process has already involved important viscera and interfered with their proper action. What we need is careful metabolic studies on precancerous states of relative health, also in very early cancer, and likewise after surgical operations, when the local manifestations of the disease have been removed; only thus can we rightly learn the true errors of metabolism which lead up to cancer.

But enough has been developed to show that the cancerous person manifests grave aberrations from the normal state, other than the local tumor.

The *blood* exhibits great changes in cancer, especially toward the end of the dis-

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ease. The hemoglobin content tends to constantly fall, and the red cells to diminish, and to exhibit various phases of degeneration. The white cells increase, and the proportion of their varieties changes greatly. Unfortunately the plasma has not been much studied, and yet the condition of this fluid must be of the utmost importance, as from it are derived not only the solid constituents of the blood but also those of the entire system. It also holds in solution the phosphates, carbonates, sulphates, and chlorides, the latter often varying greatly and being chiefly responsible for the isotonic relation of cells and serum. In cancerous cachexia a diminution of carbonic acid, a constantly diminished alkalinity, and an increase of acid principles of the blood have been fully demonstrated, pointing in all probability to an acid intoxication. It seems that the toxic secretion from a cancerous mass itself has a distinctly injurious action on the blood, for after the complete removal of a cancerous

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mass there is often found an increase of hemoglobin, as I have witnessed, and a high leucocytosis has disappeared after the removal of schirrus of the breast, only to return again with the recurrence of the tumor.

The *urine* in cancer has also been much studied, and is rarely if ever found to be that of health, although it cannot be said that any definite and specific changes have been established which are pathognomonic of the disease: the urinary excretion will constantly be found to be extremely deficient, both as to its quantity and its total solid elimination. In one very interesting case of primary cancer of the breast, in a stout, flabby lady, near 55, in private practice, the total quantity of urine, measured daily for weeks, is always very far below the normal amount, and in spite of active medication it seems almost impossible to raise the total daily solids excreted in the urine, to much more than one-half of that called for by the weight of the

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patient. This I have observed in very many cases.

In regard to the changes which have been reported in the urine of cancer patients, many observers agree that there is a disturbance of proteid metabolism, and dependent upon this many deviations from normal are found in the urine. The urea is invariably diminished, often very greatly, as I have verified time and again in many cases. The nitrogen partition is greatly disturbed, with increase in colloid nitrogen to more than double the normal amount, and an increased elimination of xanthin, oxyproteic acid, and urinary ammonia; oxyproteic acids are reported by Blumenthal as increased even in very early cancer, and independently of the size of the tumor and degree of cachexia, seemingly showing them to have some specificity for cancer, because they have not been found in other forms of malignancy.

Notable changes have also been recorded concerning the sulphur elements in the

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urine, with a great increase in neutral (unoxidized) sulphur, and a considerable excess of sulpho-cyanic acid, together with an increase in sulphates and indican, showing the results of intestinal fermentation of protein elements, which I have also constantly observed. There have been likewise other changes reported, which time forbids our considering.

The *saliva* is an important element in the digestion of carbohydrates, and consequently in metabolism and the genesis of cancer; but, unfortunately, I have not been able to find any investigations relating to its condition in this disease. But in very many tests which I have made in cancer patients it is commonly found acid, often strongly so; in my hospital cases I have it tested before and after each meal, and watch with considerable interest its change to alkaline under efficient treatment, which includes prolonged mastication.

The *internal secretions* have also been the subject of much research and specula-

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tion of late years, in regard to their influence on metabolism and the life processes of the economy, and some studies have been made concerning their connection with cancer, which cannot now be long dwelt upon. But there seems to be little doubt but that the secretions of the ductless glands in common have much to do with regulating the metabolism of the body cells. We know for instance, that disease of the pituitary body produces bone disorder, resulting in gigantism, that thyroid derangement results in myxedema, and that disease of the suprarenal capsules gives rise to Addison's disease, or bronzed skin. May we not rightly argue that derangement in one or more of these has something to do with the cellular changes which we call cancer? The favorable results which have attended the administration of thyroid, which I have myself often witnessed, as also a combination of the three extracts, as reported by some, would seem to confirm this.

The *pancreatic secretion* performs un-

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doubtedly an important part in metabolism, and although some researches have seemed to show that Beard's claim for it in cancer was not well founded, the matter should be again investigated, possibly along the dietary line herein considered.

Very much more could be given in regard to the metabolism of cancer, did time permit, but enough has been said to show that there are gross perturbations of the system connected with this disease, and that the local tumor is but an expression of one aspect of a constitutional disorder, which if unchecked tends to death, aided undoubtedly by a virulent poison secreted by the malignant cells of the tumor, when it has once developed.

Everything has its beginning, but, as Ribert says, "no one has ever seen the beginnings of mammary cancer," nor of any other malignant lesion, and we are in utter ignorance of the first change which takes place when a cell or cells take on a rampant or malignant action. But whenever or

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however it takes place the impetus must be from the plasma bathing the cell which was previously normal and innocent. We have not time to discuss the subject of "embryonic rests," which quite possibly have to do with the genesis of the disease. But these are now known to be common anatomical or histological elements, many of which are present in every one, and which are ordinarily quite harmless. It is, therefore, quite unreasonable to ascribe the cause of cancer to them alone—there must be some deeper, underlying cause which excites them to take on and continue malignant action, and that cause is found in the perverted blood and lymph stream resulting, as several writers have affirmed, from a prolonged violation of the laws of perfect health, although other evidence of this may not have been previously recognized in the individual patient.

It is more than probable that a local irritant is the exciting cause of the starting up of the aberrant action of some particu-

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lar cell or cells. These then go on multiplying inordinately, destroying adjacent tissues, and finally break down, instead of forming normal tissue. But the local irritant cannot explain why, when once started by local injury, the cells should pursue such a progressive, aggressive, and invasive course. The reason is found, as Sir Astley Cooper and others have believed, in some faulty condition of the system, which is now shown to be from a perverted metabolism, arising from many causes, and among others from over-indulgence in animal protein, coffee and tea, and alcohol.

It would seem, therefore, that for the development of the local manifestation of cancer (the tumor or new growth) three elements are requisite, namely: 1. A predisposition or suitable blood condition. 2. A local stimulation or irritation of the part affected, *upon*, 3. The site of an "embryonic rest."

In but a relatively small proportion of cases can the direct local irritant be made

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out with certainty, and even in cancer of external parts, as the breast, there is often no consciousness of external injury or even a blow, while in cancer of internal parts this is very seldom recognized. I am quite aware that cancer may follow gastric ulcer, that gall stones may act as an exciting cause, and fecal impactions in intestinal diverticula are the starting-point of cancer, etc. But the relative rarity of such occurrences shows that there must be some hidden, underlying, constitutional cause which feeds the deranged cells. I appreciate, also, the part which metastasis plays in spreading the disease to distant parts, but this is because generally the faulty metabolic cause is allowed to continue, for when this is checked by proper dietary and other treatment even metastatic foci disappear.

We come now to the question as to what this metabolic disorder is which incites formerly normal tissue cells to take on and continue this diseased action, which is real-

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ly the true problem in cancer. Alas, the actual and exact state of blood which leads up to the disease has not yet been fully determined, although all that has been learned and already briefly alluded to under the metabolism in cancer, points clearly to the lines of study which should be more closely followed. And even if we should be long in establishing a definite and true metabolic disorder, or should never determine it, this should not deter us from acting on clinical grounds, from experience, even as is constantly done in regard to many other ailments, illustrations of which will readily occur to every one. Indeed, how constantly diseases are treated empirically, with greater or less success, without any great knowledge of their real etiology.

Coming now to the important question of the prophylaxis and treatment of cancer to which this study of its medical aspects leads, we find that we have advanced far toward a proper understanding of the

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same. We have seen that cancer is but a wrong development of certain previously normal body cells, possibly "embryonic rests," by a process of agamogenesis, dependent upon excessive and faulty nutrition. Laboratory and other studies have decided pretty certainly that it is *not* due to a parasite, *nor* contagious, that it is *not* hereditary, *nor* due wholly to local irritant action, that it is *not* altogether a disease of old age, *nor* belonging to any particular occupation, and that it does *not* affect any particular sex, race, or class of persons, and that it occurs all over the earth, but with striking difference in frequency according to certain peculiarities of life, associated with advancing civilization. We have been thus forced, by exclusion, to recognize that it must be due to some systemic change, whereby the perverted nutrition offered to certain irritated cells causes them to take on a morbid action, which is prolonged by a continued malnutrition, and increased or aggravated by a vicious

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secretion from these diseased cells themselves; in other words, that it is a disease of faulty metabolism.

It will be interesting and instructive to consider for a moment some of the other diseases which are also causing a constantly increasing mortality, as shown by the accompanying table, taken from the volume of the United States Mortality Statistics. These are all recognized as due to faulty metabolism, induced by advancing so-called civilization.

It is seen here that while the death rate from infectious diseases, tuberculosis and pneumonia, has declined steadily and rapidly, that of organic heart diseases has risen greatly, and nephritis has shown a steady rise, as also apoplexy. This latter has about kept pace with cancer, which has risen from 63 deaths per 100,000 living in 1900 to 78.9 in 1913, a gain of 15.9 per 100,000 in 13 years, or over 25 per cent.

If we accept the fact that the mortality of these diseases is steadily rising from

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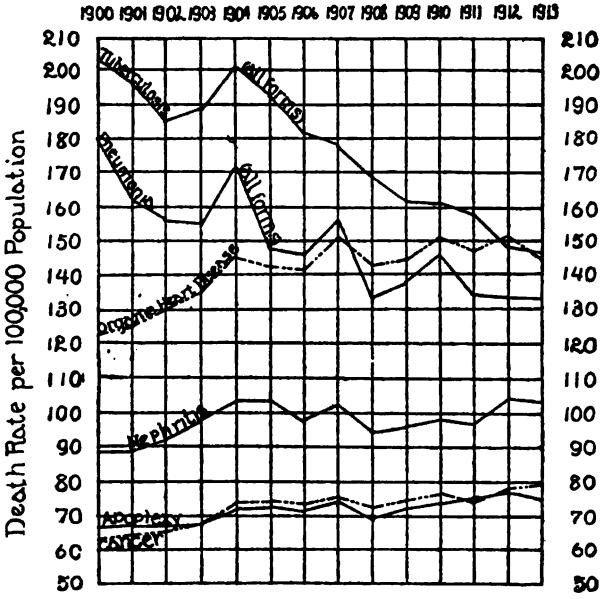

Organic heart disease, nephritis, and apoplexy show a continual and great rise in mortality, and cancer has a coincident rise of over 25 per cent. As the three former are recognized to be largely due to the incidents of modern civilization, mainly in the line of erroneous eating and drinking, it would seem reasonable to ascribe cancer to the same cause.

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the effect of modern civilization, we must also admit that cancer, whose mortality is increasing coincidently, is due to the same cause. And as these diseases are recognized to be largely the result of erroneous eating and drinking, we find here a corroboration of the claims now set forth in regard to cancer. It seems incredible that the profession has so long ignored or rejected the facts showing a constitutional origin of cancer, and have persisted in regarding it as a local disease, and have so long trifled with it, by seeking to remove the *results of the disease,* while neglecting to rectify its cause; for in spite of active and intelligent surgery the death rate advances with sure and steady steps.

Prophylaxis of Cancer. From what has preceded it can readily be understood that the prevention of cancer lies largely along dietary and hygienic lines, including such medical attention as shall secure healthy action of the secreting and excreting organs. If the figures and facts obtainable

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are correct, if cancer has surely been observed to increase under certain conditions of life, if it is found to be absent or relatively rare under certain other conditions of living, if cancer has been known to disappear spontaneously in certain individuals, especially when they have changed their mode of living, it must then follow that when the exactly correct habit and state of life are continually maintained, the disease will not occur.

In other words, when the blood stream nourishing the tissues is ideally correct, the individual cells of the body perform their functions normally, and as each cell is worn out it is removed by a healthy catabolism and renewed by a normal anabolism, and homologous cells replace those which have ceased to be able to perform their function. On the other hand, when there is perverted metabolism we have various forms of deranged action, to which we give the names of various diseases, one of which is cancer. Here in place of homologous cells, main-

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taining the tissues in a normal condition, we have a malignant metamorphosis into heterologous cells, which take on a disorderly or rampant action, and refuse to assimilate themselves to others, so as to form healthy tissue; we have then a mass of low vitality tending easily to break down and ulcerate, and to extend their malignant action to adjoining tissues, under the continued influence of a contaminated blood current.

Time does not permit further elaboration of this important subject, the details of which must now be patent to all. They are included in a simple living, with perfect mastication, reasonable exercise, the avoidance of all excesses, especially along the lines of protein, tea and coffee, alcohol, etc., with the maintenance of healthy habits of life, especially in regard to bowel action. The greatest safety is with an absolute vegetarian diet, with the single exception of butter.

The medical treatment of cancer can be

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put in a few words, although in individual cases it may involve the most assiduous attention to the most minute particulars regarding the individual in many directions, and over a greatly prolonged period of time; no detail of the patient's life can be too small or insignificant to have some bearing on the deranged metabolism which affects the cancerous growth, for good or bad.

There is, of course, no single remedy for cancer, nor will there ever be, because of the true nature of the disease, as I have tried to outline it. For the same reasons I cannot believe in a successful serum therapy, it seems so illogical, and the very multiplicity of the forms of serum which have been lauded from time to time, only to end in disappointment, would seem to point toward ultimate failure, when all possibilities along this line have been exhausted.

The first element of treatment is an absolutely correct vegetarian diet, with avoidance of coffee and alcohol in every form.

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But it is not enough for the physician to simply direct that this be taken, but to be thoroughly successful every detail must be carefully attended to so that the patient receives adequate nourishment. The details of this cannot be dwelt upon, and the matter is fully considered in various works on food and nutrition. A vegetarian diet needs no defense, for millions of human beings naturally live thus, and escape cancer, and thousands in civilized lands are adopting it for health. But there must always be care taken, not only that sufficient calories are consumed each day, but also that there is a daily proper amount of vegetable protein, carbohydrate, and fat in a form and condition to be acceptable and well digested. A good part of the fat required can be supplied by butter, of which one-quarter of a pound should be taken daily, representing 800 calories.

It would surprise you if you knew how almost invariably cancer patients are constipated and have long been so. Indeed,

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with me it is such a great exception to find it otherwise that I have come to look upon this feature of imperfect intestinal excretion, or intestinal stasis, as it is now called, as one of the prime elements in the causation of cancer. This has been strongly emphasized by Sir Arbuthnot Lane, the distinguished English surgeon, who has spoken of cancer as one of the terminal results of intestinal stasis. I feel almost like saying that the toxins produced by the millions of micro-organisms generated through intestinal stasis and fecal putrefaction are the real, incidental cause of cancer.

The kidney secretion is also found to be at fault in every case of cancer which I have studied, and is, of course, an indication of the faulty metabolism which prevails in these cases. It is necessary, therefore, to study this excretion repeatedly and most carefully, in all possible directions, in order to understand the exact condition of the patient, as it changes, daily or weekly.

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This does not refer to the presence of albumen or sugar, for I have seldom found these in my cases, but it relates to the total amount of solids thus excreted daily, and to the various component parts and their relation to one another. I have already mentioned that I seldom find the total amount equal to that which should be passed in proportion to the body weight of the patient, although often the quantity of the urine may not be far from normal.

For this purpose a very thorough volumetric analysis should be made weekly of the urine, which should be measured and recorded daily, as is the routine in the hospital and in many of my private cases. The measured volumetric acidity is very important, as also the urea, chlorides, phosphates, sulphates, indican, etc., and the treatment should be guided thereby, the aim being to secure a return to metabolic health. Alkalies form a very important part of the treatment of these cases, but details cannot be given for want of time.

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We have seen that the blood presents great changes in cancer, and this should be studied weekly, and iron or other remedies given as indicated. The weight of the patient should also be taken weekly, and while it is often desirable to reduce those who are corpulent, more commonly the weight is watched to improve the nutrition by proper dietary or medicinal measures, which cannot be here dwelt upon.

If time permitted I wanted to give you in detail reports of some of the many cases which I have had, mainly in private practice during the last thirty and more years, for it is hard to carry out satisfactory treatment in hospital cases for a sufficient length of time to be sure of positive results, but I must content myself with very brief mention of the same.

I will not weary you with statistics, but only state that I have a hundred or more records of cases in my office, and a considerable number in the New York Skin and Cancer Hospital, where I have taken

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up this special line of investigation and treatment during the past year. In about one-quarter of the cases in private practice, there had been previous surgical removal, with recurrence; many of the other cases were small, early tumors, but some of them quite far advanced before treatment, some even with much ulceration and metastatic adenopathy. In almost all of them other medical men, often several, had previously diagnosed cancer, and in a number of instances surgical operations had been arranged for. So that while the diagnosis could not be confirmed microscopically in a large share of cases, there could be little doubt as to its accuracy. And even if possibly some few of the cases were only simple adenoma of the breast, the dissipation of this by non-surgical measures avoided an operation which might possibly be followed by cancer, as has happened in certain cases which had been shown microscopically to be only adenoma after removal. In addition to the

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cancer cases there were also some 22 other breast tumors which were not included among the former. I will briefly mention a few of the cancer cases:

CASE I.—Mrs. B. E. C., aged 44, was first seen on September 12, 1892. She had a flat, painful tumor in the outer lower segment of the right breast, pronounced cancer by a well-known prominent surgeon, who strongly urged its instant removal. Within six months the breast became perfectly normal, and remained so for sixteen years, when I lost sight of her.

CASE II.—Miss B. M. L., aged 45, was first seen January 4, 1894, with a painful tumor in the upper outer quadrant of the left breast, diagnosed as cancer by three medical men, one of them a surgeon of prominence, who had arranged for surgical removal the next day. Within two months the tumor was less distinct and flatter, but it did not entirely disappear for eleven months. She was seen from time to time also for sixteen years, and had had no recurrence, the breasts being both normal when examined at the end of that time.

CASE III.—Miss J. M. A., aged 45, was first seen October 12, 1905, with a tumor of the upper, inner quadrant of the left breast, awaking her with pain at night, which had been repeatedly diagnosed as cancer by different medical men and surgeons, the latter insisting on its sur-

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gical removal; but she had always declined operation. Within two months there was little to be felt in the breast, and on January 6, 1906, three months from the first, it had quite disappeared, both breasts being perfectly normal. She has been seen for various troubles, up to the present time, over nine years, and remains perfectly free from any breast trouble, in spite of hard work and worry all the time, as a city missionary.

CASE IV.—Miss G. M., aged 44, has been under constant surveillance and treatment for various troubles since she was first seen, November 13, 1905, up to the present time. She had a tumor in the upper, inner segment of the left breast, with enlarged axillary glands; several medical men had diagnosed it cancer, and a hospital surgeon of prominence had pressed for an immediate operation. Within four weeks the painful sensations had almost passed away, and the tumor had diminished materially in size. A month later the breast was almost the same as the other, with some general caking in both. During these nine years she has been busy as a public school teacher, and although troubled with rheumatism, etc., there has never been any recurrence of the tumor, although at times there is caking of both breasts with the menstrual period: the axillary adenopathy has long ago disappeared. Her sister, aged 60, has just died with cancer of the stomach in a distant locality. I could give many more such cases, less striking perhaps, but time allows only of brief mention of some cases which had recurred after operation.

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CASE V.—Miss H. M., aged 61, came to me June 21, 1913, with multiple nodules in the tense skin left after removal of cancer in August, 1911, further surgical operation being out of the question. Under very active treatment, including thyroid and *x*-rays, many of the tumors disappeared, though some reformed and were removed under local anesthesia, the wounds healing kindly; she lived comfortably, under frequent observation, without pain, for sixteen months, and then was lost sight of, as she was doing very well and wanted to take the *x*-rays nearer her home, some distance from the city.

CASE VI.—Mrs. W. C., aged 45, first seen November 17, 1914, was twice operated on at the New York Skin and Cancer Hospital, and came to me with some hard, recurrent lumps, reddened and immovable, quite inoperable. Under faithful treatment she has been very well, without pain, and doing hard work at house cleaning, etc. She is yet under treatment, and lately a new lump has formed, though the others have subsided materially: but she experienced no pain and during these five months has worked very hard, without much or any concern regarding her trouble, except to follow out treatment faithfully.

One case treated in the hospital, with very careful laboratory studies, is worthy of mention, on account of the remarkable

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improvement occurring in an apparently hopeless case.

CASE VII.—Mrs. C. M. was first seen February 12, 1914, with cancer of the right breast, which had been operated on twice, on November 14, 1912, and January 16, 1914. When seen there was ulceration with many nodules around, the liver was enlarged to two inches below the ribs, hard and nodular; the right arm was enormously swollen and helpless. When she left the hospital, against my wishes, June 20, 1914, in four months, the ulceration had entirely healed, many of the nodules had entirely disappeared, and the arm had returned to normal size, like the other, by measurement, and the liver had retracted to a trifle below the margin of the ribs, with hardly any nodules to be felt. While in the hospital careful laboratory investigations were made according to a definite daily and weekly schedule, which cannot be detailed here. Suffice to say, the blood improved from 3,262,000 erythrocytes on entering, within two months to 4,282,000, and the leucocytes fell from 9,000 to 5,200 with many other improvements in her condition.

I must just mention one more private case, which though fatal showed the remarkably good effects of careful medical treatment, when a primary case has ad-

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vanced far beyond the possible aid of surgery:

CASE VIII.—Mrs. M. B. J., aged 68, was first seen February 17, 1914, with an enormous hard, cancerous mass in the right breast, the size of half a large melon, ulcerated under a crust over much of the surface, and with immense axillary and supraclavicular adenopathy. This had been kept concealed until the day before she called, and she was profoundly cachectic. In a short time the discharge beneath the crust ceased, the breast became softer, and on August 15, it was recorded that it was soft and movable, and not larger than the other breast, with no discharge, and no pain since a short time after beginning treatment; the axillary glands had diminished three-quarters in size, and the supraclavicular glands were much smaller. She died with pulmonary edema on September 9th, having had practically no inconvenience from the breast during the seven months of treatment.

Our time does not permit any further consideration of this most interesting and important subject, and I fear that I have trespassed already too greatly on your patience. But feeling as I have for many years, with a constantly growing confidence in my thesis in regard to the cause

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of cancer and its proper treatment, and with increasing experience, I cannot do otherwise than urge all whom I may, to investigate, and see if the claims I make are correct. I know well that I am going contrary to the commonly accepted ideas in regard to cancer, and that very much work will be necessary before the views here presented will be adopted and acted upon sufficiently to check the steadily rising mortality from this terrible disease. But if the facts and statistics which I have referred to are found to be correct by others, it is not too much to hope that, within the next generation at least, the mortality table will show a decline more or less commensurate with that which has taken place in regard to tuberculosis and pneumonia, and we will no longer have the frightful death rate of 90 per cent. of cancer victims.

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CHAPTER VII

THE RELATION OF DIET TO CANCER*

That deaths from cancer are certainly on the steady increase in this and other countries has been abundantly shown by statistics, which need not be quoted here. That the evident increase of cancer is not wholly or even largely due to more accurate diagnosis and public attention to the disease is admitted by all who have given due consideration to the subject; that thus far practically nothing has been accomplished in the way of checking the extension of cancer is also a matter of general knowledge; and all this in spite of the earnest and faithful work of innumerable research workers, and the expenditure of vast sums of money.

* Read before the Section on Pathology and Physiology, American Medical Association, June 25, 1914.

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It is proposed here to make a brief review of the present position of the question involved, to examine some of the facts concerning malignant disease, and to inquire if sufficient attention has been paid to a certain element which so largely concerns the health and well-being of the individual, and the structure and growth of normal and abnormal tissues, namely, diet.

There must, of course, be some reason for the increase of cancer, and earnest work should still be given to searching most diligently for the cause of the disease, in the laboratory as well as in practice, even though as yet there have been relatively little results.

Parasitism has been excluded, for while in some animals inoculation experiments have resulted in the transmission of certain tumors, little has been determined except that the tumor cell when transplanted can induce the neighboring tissue cells to take on a similar aberrant action, which may result in the formation of a malig-

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nant tumor. The same occurs in metastasis in cancer patients. But this does not at all explain the true nature of cancer, nor its development in those who have had no connection with other patients so afflicted. On the other hand, the instances of suggested or supposed human transmission of cancer from one person to another are so remarkably few, and often so exceedingly doubtful, that the question of its contagiousness has also been excluded, certainly in the sense in which this term is applied to other affections. It has been found impossible to inoculate human cancer into rats, mice, and apes, or to inoculate animal tumors into animals of different species.

Heredity has been advanced as a cause, but statistics fail to verify this in any degree whatever. In former years malaria was believed to have an influence, and one investigator thought to trace the prevalence of cancer to telluric influence, showing a preponderance of cases along cer-

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tain water courses; syphilis, in its latent effects, has also been claimed as an element in the causation of cancer; but all these and many other etiological propositions are no longer considered to be tenable, and the very multiplicity of suggested causes shows that we are yet far from the true etiology of cancer.

More recent scientific study has attempted to show that cancer originates from what is called "embryonic rests," or prenatal, wrongly placed tissue elements, which at some time or other take on morbid action and develop into what we know as the various forms of cancer. But here again it is necessary to determine what causes them at certain times and in certain places thus to proliferate and form new tissue, which then becomes malignant and may proceed to destroy all contiguous tissues, and even to cause death. It has been claimed by many that local injury is the cause which determines the activity of the misplaced cells, and starts

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them on their disastrous or rampant course. While this appears to be the case in certain instances, it is far from proven to be always so, nor does it in any way explain the persistency with which malignant disease, when once started, pursues its destructive and even fatal career, with a great tendency to recurrence, either in the former site or at some distant focus, through the agency of the lymphatic or vascular system.

On the basis of the embryonic theory surgeons have of late most earnestly advocated the very early and complete removal of malignant lesions, including those of suspected malignancy, and even many innocent lesions which are observed occasionally to lead to cancerous formation; and with our present knowledge this cannot be urged too strongly. But while this has improved operative statistics it has not contributed much to our real knowledge of the basic cause of cancer, nor has it taught us why these lesions, or

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"embryonic rests," will remain quiescent or prove harmless in some individuals, while in others they are most formidable agents of destruction. For it is now recognized that these are most common anatomical or histological accidents, indeed it is claimed that they occur in every individual.

The same is true of the many and various forms of treatment other than surgical excision, such as deep acting caustics, and even the *x*-ray and radium, which, like surgery, only remove the *products of disease* and the focus of possible systemic infection, and do not affect the basic cause of the complaint; this latter recent scientific investigation and observation are showing more and more to be associated with metabolic or chemico-physiological changes in the system. All this leads thoughtful persons to inquire if there is not some deeper, fundamental cause lying back of the trouble, which should be reached and rectified by medical skill.

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It is recognized by all that the tissues develop and are maintained by nutrition derived from the food and drink taken, and tumors all certainly grow by the same means. For years it has been claimed by one person after another that diet has more or less influence in the production of cancer, and even over one hundred years ago Howard Lambe and others adduced strong proof to show the effect of diet in curing certain cases of undoubted cancer of the breast and uterus, the diagnosis of which was confirmed by prominent surgeons of the day.

It has been pretty clearly demonstrated that cancer is a disease of civilization, increasing among those peoples who had previously been free from it, in proportion as they become associated with those who are more highly civilized, and as they have adopted their customs and manner of life, and diet; this has been shown in regard to negroes before and after the Civil War, and also as to primitive peo-

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ple in India, Australia, Africa, Mexico, Brazil, etc.

With advancing civilization the diet has become more and more complicated, and luxury and overeating have increased: this is especially true of meat eating, and alcohol and coffee drinking. The increase in the consumption of meat has been startling in many localities, and in England it has reached a yearly total of 130 pounds per capita for men, women and children, in addition to large quantities of fish, game, poultry, rabbits, eggs, cheese, etc. Among the well-to-do the meat consumption has been estimated at between 180 and 330 pounds per year: all this is much more than double the amount consumed fifty years ago, and in the same time the deaths from cancer have increased over *four fold.*

The same figures apply roughly to the United States, where the per capita meat consumption is said to be considerably in excess of the European average, and all

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statistics show that cancer is rapidly increasing in this country. In a recent Bulletin of the Board of Health of New York City the following statements are made in regard to the mortality from cancer in 1913: "The statistics of our seven largest cities recently tabulated, show that in that year the cancer death rate was the highest on record. For New York City the rate was 82 per 100,000 of the population, against an average of 79 for the last five years; for Boston 118, against an average of 110; for Pittsburgh 79, against an average of 70; for Baltimore 105, against an average of 94; for Chicago 86, against an average of 81; for Philadelphia 95, against an average of 88; for St. Louis 95, against an average of 85." This average increase of over 8 per cent. of deaths from cancer in the combined population of these seven cities during the last five years is certainly an alarming fact, and cannot be explained on the ground of greater accuracy of diagnosis;

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for it is not to be presumed that there has been such great improvement along these lines during the single year 1913. It has been shown that with the same rate of increase of deaths from cancer, unless there be found some way to check its production, the death rate at the end of the century will be appalling.

In striking contrast to the enormous extent and increase of cancer in meat-eating communities may be mentioned the relative rarity or almost absence of the disease in regions where the diet is largely confined to the products of the ground. Williams[1] has collected from all sources the greatest amount of evidence that cancer is relatively rare, and often really unknown, as reported by competent observers, among various aborigines in the interior of many countries, who live on the products of the vegetable kingdom, with little if any meat secured in hunting.

Is it not possible and even probable that the relatively less increase in cancer in

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New York City during the last five years is in part due to dietary causes? Thus in 1913 the death rate was 82 per 100,000, against 79 for the average of the preceding five years, while the highest increase was in Baltimore, 105 against 94, or 11 per 100,000 to 3 in New York City. It is known that we here, in New York City, have vast hordes of foreigners, many newly landed, who still live as at home, and are too poor to buy much meat. The Italians still live on macaroni, and cereals form a large part of the diet of those from southern Europe, etc., etc. During a rather extensive trip through the Far East I was unable to see or even hear of any cancer, although I met a large number of medical men and made inquiry regarding the same, and visited hospitals with a total of many thousands of patients; in Japan, Korea, China, the Phillippines, India, Siam, and Egypt I met the same response, that cancer was rarely seen among those vegetarian peoples.

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Cancer has repeatedly been observed to disappear spontaneously, and many such cases are on record by careful and competent medical men: in certain of these instances it has occurred in connection with a radical change in the mode of life and diet, but in the majority of instances there is no record of the special cause of its disappearance. But the lesson to be learned from this is that there are conditions of the system which are antagonistic to the abnormal proliferation of cell tissue, even when it has begun to take place, as we must believe that there are conditions of the system which favor such diseased action of aberrant cells. An interesting confirmation of this is attributed to Ehrlich, but I cannot find the original reference. He "has shown that mice living upon a rice diet cannot be inoculated with cancer, while mice living on a meat diet can be readily inoculated, cancerous tumors developing quickly and continuing to grow until the animal dies. Ehrlich also

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found that when mice with cancerous tumors, the result of inoculation, were placed upon a rice diet, the tumors ceased to grow and in many cases degenerated and disappeared." Interesting confirmation of this has been given by Sweet, Corson, White, and Saxon*. They found that 75 per cent. of 75 mice developed experimentally inoculated tumors when under normal diet, while only 19 per cent. of 75 other mice developed such tumors when under a diet of glutenin and gliadin, that is vegetable proteins; also that the tumors in the latter were in thirty days hardly larger than in the former in ten days.

Psoriasis furnishes an illustration which may be of service in understanding the relation of diet to cancer; for psoriasis is characterized by a disordered epithelial growth, which both shows on the surface and manifests itself by epithelial prolongations into the corium, which are quite comparable to the ingrowing cellular masses of early cancer; moreover it is not

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so very rare to have epithelioma develop from lesions of psoriasis.

The real cause of psoriasis has not as yet been established, but there is abundant testimony to show that the eruption is intimately connected with faulty nitrogenous metabolism, or rather with the presence of an excess of nitrogenous matter in the system. For many years the present writer has adduced proof of this relationship, and has reported a number of cases, confirmed by other practitioners, where the lesions of psoriasis have entirely disappeared, simply under an absolutely strict vegetarian diet, excluding also coffee and alcohol, without the use of any medical treatment whatever, internal or external; he has also many patients in private practice who remain free from eruption while strictly faithful to the same diet, and many others who relapse again and again when the diet is relaxed, and again lose the eruption under rigid vegetarian diet. All this has been confirmed

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by other observers, and very strikingly so by Dr. Schamberg[8], who made some very careful laboratory observations in connection with the Philadelphia Polyclinic, on nine psoriasic patients. From his studies he concluded that these patients possess a strong tendency to store nitrogen, and that on a high protein diet tremendous quantities of nitrogen may be retained in the system; he also confirmed the injurious effects of a strong nitrogenous diet, and the disappearance of the eruption under vegetarian diet. We are as yet quite in the dark as to why various disturbances in regard to nitrogenous and other metabolism take place in the body of these patients, as we are of the reasons of gouty and diabetic disorders, but clinical facts often lead the way to pathological discoveries, and those in regard to psoriasis are instructive and suggestive in our present study; and such researches are much needed in regard to the metabolism of cancer patients before the develop-

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ment of the disease, or in its early stages although considerable work has already been done in connection with the chemico-pathology of advanced cancer.

There is an analogy to be found between what has been previously mentioned in connection with the natural history of cancer, as to its increase in connection with the greater consumption of meat, and what has just been detailed in regard to psoriasis. While to a superficial observer there may not seem to be any very great connection between the two diseases, there is in reality a lesson to be learned from the one to the other. In both we have perverted and active proliferation of epithelial cells, and inasmuch as cell growth depends upon protein, we have with an excessive nitrogenous intake, or a retention of nitrogenous elements, an augmentation of the eruption of psoriasis, even as we have seen cancer increase with the increased consumption of meat. And, just as psoriasis has been observed by many to dis-

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appear when the nitrogenous supply was cut off, so numerous observers and the present writer among them, have seen unquestioned cancer steadily retrogress and even disappear, and remain absent, under a strictly non-nitrogenous diet.

For very many years I have held the view that meat eating was productive of cancer and have treated very many cases, of both recurrent and primary cancer, with an absolutely vegetarian diet, with results in some cases which were remarkable and most gratifying. But I have hesitated writing strongly on the subject before lest I should be misunderstood or misjudged, as in such cases reliance has to be placed on a clinical diagnosis (always verified by others), while results claimed are always open to question by some. I have also feared lest I might really do harm by advocating a medical consideration and treatment of cancer, since thereby some might be led to neglect operative measures in proper cases, at the proper time; and so

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in certain instances great injury and injustice might be done to the patient, and the time pass in which a surgical operation might possibly be of service.

I wish, therefore, to repeat what I said before, that with our present knowledge competent surgical interference cannot be urged too early or too strongly in suitable cases; but I wish also to enter my strong protest against the course which is usually followed in regard to cancer, both before and after operation. With a rather extended experience, during the last forty years I have almost yet to find a case which has received adequate and continuous medical care before operation, with a view of discovering and rectifying the cause of the morbid growth. Too often when a cancer is suspected or discovered it is taken as a foregone conclusion that the malady is hopeless, except as the *results of the disease,* that is the new growth, may be removed by the knife, *x*-ray, radium, caustics, etc. And after a surgical operation,

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as far as my observation goes, the patients are invariably left entirely to their own resources, with the hope that the tumor will not regrow, but with no attempt so to guide the life that there shall not be the tendency to a recurrent malignant new formation.

The limits of the present paper will not admit of a full discussion of the problems of metabolism and chemico-pathology which may and often have to do with this tendency to misgrowth of tissue, concerning which there have been some interesting and valuable researches which are of practical importance in regard to the prevention of cancer, but brief mention may be made of a few points.

Ross[4] has satisfied himself that there is a failure in the potash element in patients who are subject to cancer, and for many years he has administered one of the salts of this mineral in large quantities, both to those threatened with the disease and even in advanced cases, with most satisfactory

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results. This I can verify fully, and for very many years I have given the acetate of potassium to a large number of patients thus afflicted, and am confident that it has had a large share in producing the benefit that has been observed. Ross calls attention to the errors which existed in regard to the cooking of vegetables, whereby the natural salts are extracted in the water in which they are cooked, which is then thrown away; among the aboriginal natives who are vegetarians, who escape the disease, it is stated that they consume also the water in which vegetable substances are cooked. This waste of the natural salts is especially seen in connection with the cooking of potatoes. These are commonly peeled before being boiled, and by this means the inner skin, rich in salts, is necessarily removed, and the exposed starchy matter is then further devitalized by the water in which they are boiled; they should be boiled in their skins, and it is even better to eat the skins as well, al-

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though their outer coating may then be easily stripped off, leaving the inner skin, containing abundance of potash and other salts. Ross adduces much proof in regard to the error in equilibrium in regard to potash salts in those tending to cancer, which cannot be detailed here, but is worthy of serious consideration.

Time fails even to allude to the various studies which have been made in regard to the many alterations in metabolism which have been observed in cancer patients, all however showing that there is a basic cause for the remarkable and virulent action which certain cells of the body may take on and continue, exciting the same diseased condition in contiguous cells, because they also are bathed in the same deranged blood stream.

Why in some individuals a disturbed nitrogenous equilibrium resulting in cancer occurs, while so many escape, remains still an unanswered question, like so many problems in medicine. Chemico-physiology

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and pathology are yet in their infancy, and the mysteries of anabolism and catabolism are great, but that they and the action of all the cells composing the organism are under the influence of diet is beyond question. It is also certain that various other causes, such as mental and physical overstrain, etc., can produce such a derangement of the vital organs of the body that disturbed metabolism follows, and that a diet which at one time or in one individual is well borne, at another time or in another individual produces disease. Accumulated evidence, dating back many, many years, points to excessive nitrogenous intake, together with faulty cooking, incident to a more refined civilization, so-called, as a prolific cause for the development of cancer, while an absolutely vegetarian diet, with the exclusion of coffee and alcohol, in conjunction with proper medicinal measures, has repeatedly resulted in the disappearance of cancer. The length of this paper prevents the presentation of illustra-

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tive cases which have occurred in my practice during the last forty years, some of the subjects remaining entirely well for ten or more years thereafter.

The medical treatment of these cases along lines of eliminative and constructive therapy, undoubtedly contributed toward the favorable results, but unaided by dietary measures these would certainly have been entirely ineffective.

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CHAPTER VIII

DIETETIC AND MEDICAL TREATMENT OF CANCER*

In some of the reviews of my book on "Cancer, Its Cause and Treatment," the regret has been expressed that I had not given more exact details in regard to the treatment employed in obtaining the favorable results in the cases reported. This brevity was necessitated in part by the length and character of the lectures, which aimed rather at demonstrating the metabolic nature of the disease, for further study and proof; and in part by the difficulty of being more definite, within the compass of the lectures, concerning the many and various measures necessary to

* Read before the Luzerne County (Pennsylvania) Medical Society, March 8, 1917.

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restore perfect metabolism, and so alter the system to an anti-cancerous state, for each cancer case requires very special study and often most varied treatment. It was also supposed that the practicing physicians attending the lectures would be able to apply the principles enunciated.

It must be understood that there has not yet been demonstrated any one definite state or condition of the system which certainly leads to cancer, and perhaps there may never be. But all observation, as well as statistical evidence, and some laboratory studies, point so strongly to cancer as a disease of advancing civilization, and scientific research has so clearly eliminated the many suggested causes of malignant disease, that we are forced by exclusion to look to metabolic changes in the system as its cause. These, leading to a disordered blood stream, favor the disordered growth of certain body cells, culminating in masses to which we give the name of cancer. For no one questions that nutrition, good or

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bad, depends on the character of the blood furnished to the body cells.

In many reviews, and in notices of a former article, I have been quoted as regarding meat eating as the cause of cancer. This is only partially correct; although I have shown that the incidence of cancer is closely related to an increase in the consumption of meat in many localities, and have pointed out its relative infrequency in herbivorous animals and vegetarians. But the very fact that it may occur even among them proves that there is some other causative element not yet fully determined. I have also referred to high authorities who have satisfactorily demonstrated a metabolic disturbance of protein elements in cancer subjects, and an imperfect nitrogenous partition in the urine. Much more study will be necessary, both of the blood, including its plasma, and the various secretions and excretions, both in the very early stage of cancer and also after surgical removal, if we wish to learn

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all the conditions which lead up to the tumor formation and its recurrence after operation.

Long ago Abernethy wrote: "There can be no subject which I think more likely to interest the mind of the surgeon than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings with it nothing but disgrace, if the diseased propensities of the system are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance."

What then are the causes of this disturbed condition, and what are the means of rectifying them? The causes lie in the various elements which compose what we call modern civilization, and the escape from the disease lies in returning to the simple life and the avoidance of the causes of degeneration. Statistical and other

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proof has been presented elsewhere to show that luxurious living, which includes the use of much animal food, coffee and tea, and alcohol, together with indolence, or want of sufficient muscular activity to burn up the waste products, in connection with the persistent neglect of hygienic laws, should be placed first among the causes of cancer. In one decade in England it was found that cancer mortality was more than twice as great among well-to-do men having no specific occupation, as among occupied males in general, the ratio being 96 to 44. Furthermore, it is now well recognized that the refining, preparation, and cooking of food often interferes with the proper supply of mineral and other elements of nutrition necessary to the system.

I know that it will at once be claimed that the disease occurs also among the poorer classes, who cannot be said to be subject to "luxurious living." But this latter is, after all, only a relative term,

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and we know that the poor continually do indulge in erroneous eating and drinking to a degree which does disturb metabolism in many directions, and we know what a large class of disorders of various kinds are thus occasioned among them. It has, however, been definitely shown in England, where statistics are accurately kept and analyzed, that cancer is very much more prevalent per 100,000 in those parts of cities which are occupied by the well-to-do than in the poorer sections.

The guiding of the diet for these cases is often not a simple matter. Protein the system must have, to build up and regenerate the cell life of the body. But the ox and the sheep get their protein, and even the iron which man seeks in their flesh, from the ground, and the vegetable kingdom contains abundant protein and mineral substances, even for man, if they are rightly sought for. And it is recognized that herbivorous animals, as also primitive races who subsist on the products of the

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ground, are relatively or quite free from cancer, whereas carnivorous animals, as also domesticated dogs and cats, are especially prone to the disease; and it has been repeatedly shown experimentally that a purely vegetarian diet inhibits or greatly diminishes the receptivity of inoculation with cancer material in mice.

But it is rarely satisfactory to simply order the cancer subject to subsist on a vegetarian diet without some special directions in regard to the same; this is especially true in regard to the poorer and more ignorant classes, and when it is attempted it is surprising to see how much they depend on animal food in some form or other.

To aid in understanding and carrying out treatment perfectly in the out-patient clinic for the medical treatment of cancer, at the New York Skin and Cancer Hospital, a four-page card has been prepared which is given to each patient, with instructions to study it and carry out every detail per-

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fectly. On the outer sides are instructions in regard to cancer, and the danger of neglect, together with directions in regard to the preparation and consumption of food, mode of life, etc.; and on the inside pages a menu, or diet list, for each meal, for six days, which is here presented. This is to be repeated over and over again, and by this means the same diet does not fall on the same day of each week.

DIET FOR CANCER

FIRST DAY

Breakfast	*Dinner*
4 ounces Rice	5 ounces Vegetable soup
3 " Corn bread	3 " Baked potatoes
1¼ " Butter	3 " Stewed celery
½ " Sugar	3 " ounces Corn
Hot water	1 " Graham bread
	1¼ " Butter
	1 Fresh apple

Supper

4 ounces Rolled oats
2 " White bread
1¼ " Butter
4 " Stewed prunes
¼ " Sugar
Very weak tea

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SECOND DAY

Breakfast	*Dinner*
Orange	5 ounces Pea soup
4 ounces Hominy	3 " Macaroni
2 " Graham toast	3 " String-beans
1¼ " Butter	3 " Carrots
½ " Sugar	2 " Bread
Postum	1¼ " Butter
	Dates

Supper

4 ounces Cream of wheat
2 " Graham toast
1¼ " Baked apple
2 " Crackers
1¼ " Butter
¼ " Sugar
Very weak tea

THIRD DAY

Breakfast	*Dinner*
Banana	5 ounces Corn soup
4 ounces Pettijohn	3 " Baked potatoes
2 " White bread	3 " Spinach
1¼ " Butter	3 " Boiled onions
½ " Sugar	2 " Bread
Hot water	1¼ " Butter
	Raisins

Supper

4 ounces Farina
4 " Stewed figs
2 " Graham crackers
1½ " Butter
¼ " Sugar
Very weak tea

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FOURTH DAY

Breakfast

Raw apple
4 ounces Cornmeal mush
2 " Graham bread
1¼ " Butter
⅓ " Sugar
Postum

Dinner

5 ounces Vegetable soup
4 " Baked beans
3 " Cauliflower
3 " Asparagus
2 " Bread
1¼ " Butter
Orange

Supper

4 ounces Rice
4 " Stewed prunes
2 " Graham crackers
1¼ " Butter
¼ " Sugar
Very weak tea

FIFTH DAY

Breakfast

Orange
4 ounces Cracked wheat
3 " Corn muffins
1¼ " Butter
⅓ " Sugar
Hot water

Dinner

5 ounces Sago soup
4 " Spaghetti
3 " Lima beans
3 " Corn
3 " Boiled onions
1¼ " Butter
Dates

Supper

4 ounces Cream of wheat
Sliced orange
2 ounces Oatmeal crackers
1¼ " Butter
¼ " Sugar
Very weak tea

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SIXTH DAY

Breakfast

4 ounces Samp
2 " Graham toast
1¼ " Butter
½ " Sugar
Postum

Dinner

5 ounces Celery soup
4 " Baked potatoes
3 " Carrots
3 " Spinach
1¼ " Butter
2 " Bread
Figs

Supper

4 ounces Wheatena
4 " Stewed figs
2 " Uneeda biscuit
1¼ " Butter
¼ " Sugar
Very weak tea

This diet list has been pretty carefully worked out, so that it totals an average of about 2,200 calories for each day, with 140 of vegetable protein, and a proper proportion of fats and carbohydrates. For some months* this has been used, both in the hospital and in private practice, with very satisfactory results, and patients have thrived on it and increased in weight. It may be interesting to give also the contents

* At the time of this publication it has been employed for four years in scores of cases with most satisfactory results.

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of the last page, which contains directions to assist in carrying out this line of treatment:

"Some interchange of the different articles may be made according to the season and to suit the appetite or convenience of patients; but in the main this bill of fare should be followed, with occasional substitution of similar articles, if necessary.

"Bread at least twenty-four hours old may be taken as desired.

"A little old cheese may be grated on the macaroni and spaghetti, but not cooked with it.

"One boiled or poached egg may be taken for breakfast every other day, and very fat bacon on the alternate days, unless otherwise directed by the physician.

"It is desirable to eat the skins of potatoes, baked or boiled.

"Each and every meal should be eaten very slowly, for half an hour, with long chewing.

"One tumbler of water, not iced, is to be

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taken with each meal, but not when food is in the mouth; also a tumblerful of hot water one hour before breakfast and supper.

"No milk is taken unless specially ordered, and this should be done very rarely.

"The vegetable soups are made from a stock composed of the water in which all the vegetables for the family have been boiled, including potatoes, added to day by day, and allowed to evaporate; a portion of this is each day thickened as desired with barley, rice, farina, sago, vermicelli, etc.

"The cereals are to be boiled with water, three or four hours, and may be cooked in the afternoon and heated in the morning, adding more water. Rice, farina, and cream of wheat require only an hour. Chopped dates, figs, raisins, or currants may be added to cereals when desired.

"All the cereals are to be served very hot, on hot plates, and eaten with butter and salt to taste (not milk and sugar).

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They are to be eaten very slowly with a fork, and very well chewed.

"The crackers with supper may be varied to suit the taste; they should be eaten dry, with butter, and chewed very thoroughly.

"Nothing should be taken between meals, unless especially directed, and the life should be as simple and healthful as possible, with early and long bed hours."

The physician, therefore, who would successfully overcome a cancerous blood state, whether in a very early stage of the tumor or in its fuller development, or even when it has recurred, must fully realize the gravity of the problem involved and the seriousness of the work he has undertaken. He must study and strive to understand metabolism and its relation to the nutrition of the tissues. He must make, or have made, very frequent volumetric studies of the urine, in regard to all its ingredients, and grasp and rightly interpret the findings, certainly weekly, in connection with

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the diet and medication of the patient, which must be guided thereby, for it must be remembered that imperfect and deficient urinary secretion is a common forerunner and accompaniment of cancer.

He must also watch and study the patient in all aspects of life, for, as shown in the work already alluded to, there are very many elements which contribute to the degraded blood stream back of the malignant disease which results in the local lesions which we call cancer. Bad sanitation of all kinds, mental shock, strain, and worry, irregular bed hours, imperfect or neglected intestinal excretion, rapid eating and imperfect mastication, and a thousand errors in eating and drinking, all contribute to this, which cannot be treated of in a brief article, but are more or less developed in the reference mentioned.

It is readily seen, therefore, that the dietetic and medical treatment of cancer cannot be compassed in a small space. Nor can it be acquired or accomplished without

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very serious and continued thought and work on the part of the physician; moreover, it must be recognized that infinite patience and perseverance on the part of both physician and patient are requisite to overcome a condition of system which has been slowly developing long, long before the first vestigium or trace of the local lesion has been deposited. And when the malignant local process, or cancerous mass, has once been started, and especially when it has become at all well developed, and its cells are giving forth a secretion or hormone which is poisonous to animals and assists in poisoning the blood stream and degenerating its corpuscular elements, it is readily seen that it is a most difficult task to reverse the wrong metabolism, to regenerate the depraved blood, and to cause the absorption or return to normal of the diseased cells forming the tumor. However, this dietetic treatment must be continued a very long time, or indefinitely, in order to obtain satisfactory and permanent results.

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But that this latter can happen is abundantly shown by occasional cases of unquestioned cancer known to have entirely disappeared for many years, and sometimes reported, and also by my own experience during the last thirty or forty years, as detailed somewhat in the work already referred to.

But it must be here understood that, inasmuch as a well-developed cancerous mass has already become a menace to the system, by the degenerative properties of its secretion or hormone, it may be, and often is, desirable to remove the same, whether by the knife, *x*-ray, radium, or even caustics. But this local treatment or removal of the local product of disease can seldom, if ever, be undertaken alone with a positive expectation of a permanent cure, unless proper measures are faithfully and persistently carried out, almost indefinitely, "to alter and amend the state of a cancerous constitution, lest the disease should be revived or renewed by its dis-

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turbance," as Abernethy so wisely remarked long ago.

I am, of course, quite conversant with the good and even permanent results which may follow the local treatment of cutaneous epithelioma, whether by caustics, *x*-ray, radium, thorium paste, or the knife; but these local lesions, which rarely metastasize, should be distinguished from cancer of the breast and internal organs, which furnish the bulk of the distressing cases which thus far have baffled control.

The dietetic treatment of true cancer, then, both prophylactic and active, consists in an absolutely vegetarian diet, so rightly proportioned in its vegetable protein, carbohydrates and fats as to afford perfect nutrition, and so arranged and administered as to be acceptable and attractive, in order that the patient may be constantly conscious of a general well-being and exhibit a steadily improved state of health. All this and other treatment should be carried on with confidence and an expecta-

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tion of good results, for undoubtedly faith and hope contribute greatly to all therapeutic success, whereas the despondency attending the existence of cancer, and its reputed incurability, also contribute much to the disastrous results commonly observed.

The actual *medical treatment* of cancer cannot be briefly detailed, as may be judged from what has preceded, and because individual cases may require most different therapy to meet individual requirements; but some salient points may be mentioned. There is not, and probably never will be, any single remedy, or specific, "good for cancer;" although innumerable remedies, quack and other, have been vaunted, only to vanish after their uselessness or worse had been demonstrated by the disappointed hopes of many credulous sufferers. The very nature of the disease would indicate this, and would also indicate that no serum or vaccine would ever be found which could permanently effect a change in the metabolic con-

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ditions inducing the tumor formation, and the subsequent disastrous systemic conditions ending in death. It is, therefore, not proposed to offer any new or special remedy which can cure the disease.

But everything can be done, and very much should be done, both in the very early stages and late in the disease, for experience shows that these can have a profound effect in influencing the metabolic errors productive of cancer, or the precancerous conditions, as I have already pointed out; these, with proper dietetic treatment, and attention to every hygienic detail, can not only check the cancerous process when once begun, but can cause the entire removal of early lesions, and even those later in the disease, including metastases. It is understood, of course, that this involves months of time, and with so terrible and treacherous a disease proper measures may be required indefinitely.

First in importance in connection with the internal treatment of cancer come

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measures which relate to body elimination, which is found to be imperfect in both the early and late stages of the disease, as I have shown elsewhere.

Constipation, or imperfect intestinal action, or intestinal stasis, as it is now called, is a prominent feature, both in very early cases and in those well developed. So constantly have I observed this, in large numbers of cases, that I have come to look upon toxic infection from the millions of micro-organisms in retained feces as one of the chief elements in the degeneration of the blood stream which leads up to cancer. And this cannot receive too much care and attention from the physician in charge, and should be looked into so constantly as to secure a free, normal action of the bowels after breakfast and even oftener. It is impossible to go into details of this homely matter, but I can hardly speak too strongly of the importance of it, as I have learned from experience. It is not enough to give purgatives from time to time, nor do I find

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the use of mineral waters is desirable in these cases. I much prefer the vegetable laxatives very judiciously administered, which can commonly be diminished or dispensed with under the effect of proper food and abdominal massage.

The urinary excretion is invariably disturbed in cancer, and even very early in the disease indicates errors in the blood stream which should be most carefully watched and attended to. Few realize that the urine is secreted directly from the arterial blood, after it has received its nutriment from the alimentary canal and has been submitted to the action of the secretions of the various organs, including the ductless glands, as also to its oxygenation by the lungs. The kidneys therefore must be looked upon as the final judge and jury, in determining what perfect blood should be, exhibiting in their secretion the results of their efforts to remove elements injurious to the system and to keep the blood in a normal state. When we speak, there-

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fore, of influencing the urine by dietary or other treatment, it only refers to the employment of such measures and remedies as shall rightly regulate the nutrition of the system, promote perfect metabolism and secure adequate and normal elimination of injurious products.

In this sense, then, the urine, if very frequently and completely studied volumetrically, in its very many components, and correctly interpreted, affords us one of the very best aids in understanding and correcting the metabolic errors which underlie cancer. Mention has already been made that the nitrogen partition in the urine is generally at fault in cancer, as shown by repeated research laboratory reports; the urea is low and the acidity high, and alkalies, especially the acetate and citrate of potassa, play a considerable part in the overcoming of the systemic error.

But, as already stated, it is clearly impossible to give briefly and at all clearly any line of treatment which is to be invari-

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ably followed for the months or years necessary to overcome the cancerous condition. For it must be remembered that, as in regard to tuberculosis, whose death-rate, according to the United States mortality tables, has fallen over 25 per cent. since 1900, by prolonged proper feeding and prolonged medical care, so in regard to a similarly chronic condition, cancer, there may be the need of any number of remedies from time to time to accomplish the end desired. This is no idle comparison, and only by recognizing the disordered constitutional state in cancer subjects, and by applying the most careful and intelligent medical measures, with proper diet and hygiene, can we overcome this dire disease, or prevent its occurrence. But that this certainly can be accomplished in a very much larger percentage of cases than is obtained by our present general method of surgery, etc., has been abundantly shown, and that with the general adoption of these views by the profession and laity there will

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be a material diminution in the morbidity and mortality of cancer is equally certain. It will undoubtedly take a long time to effect a startling change in the general death-rate from cancer, but with the faithful and continued application of these principles there can be little doubt but that time will show a steady diminution in the morbidity and mortality from this disease comparable at least to the twenty-five per cent. reduction which has occurred in tuberculosis since 1900, by proper hygienic and dietetic measures.

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CHAPTER IX

NON-SURGICAL TREATMENT OF CANCER

What is cancer? Laboratory and other investigations have failed to answer the question, except to agree that it is a morbid disturbance of cells of the body which once were normal. But what is it that determines the development of certain of the cellular elements of the body into healthy or diseased tissue? It is the condition of the blood stream, influenced by a number of disturbing agencies, all working through what is known as metabolism. According as this is correct or deranged we have health or many conditions to which we give the names of various diseases. No one doubts that rickets is due to such a cause, nor does any one question but that acute gout results from a disordered state of the blood. Diabetes and lithaemia give rise to

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many other symptoms than those manifested by the kidney excretion.

The question now arises, what are the causes of a deranged blood stream? First must come erroneous eating and drinking, as shown in the case of rickets and gout. Next, faulty action of some of the organs of the body, induced in many other ways, which need not be entered on here, as they are familiar to all.

The blood is the life, and vast amounts of labor and patience have been expended, and many books written, on the character of the blood in various diseased states of the system, although not many years ago only ridicule was given to one who used the expression "bad blood." We certainly owe much to laboratory investigations: for recent works show very many and great changes in it in many diseases, including cancer.

But unfortunately most of the efforts have been in connection with the microscopic examination of the corpuscular ele-

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ments of the blood, and very little attention has been paid to their chemical constitution or to the plasma. And yet this latter is of the utmost importance, as from it are derived the nutrient principles not only of the solid constituents of the blood, but also those of the entire system, about 8 per cent. of it being serum albumen and serum globulin. It also holds in solution the phosphates, carbonates, sulphates, and chlorides, the latter often varying greatly, and being chiefly responsible for the isotonic relation of cells and serum.

Unfortunately, also, most of these studies, as also those of the urine, and indeed most laboratory investigations, have been made in connection with cases of advanced cancer, when the metabolic disorder which led up to the tumor formation had existed long, and even when vital organs are involved by the disease, and so teach us little in regard to the true causes of cancer. What we need are more researches on precancerous conditions of the system, and

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those belonging to the very earliest stages of the disease. For just as the earliest possible recognition of cancer has been emphasized strongly in connection with its surgical treatment, so also the earlier these conditions are recognized and met by proper dietary and medical treatment, the better the prospect of success, as experience has taught me, during the last thirty and more years.

In speaking, therefore, of the non-surgical treatment of cancer this last qualification is to be borne well in mind. While in some instances it is possible to do very much for very advanced cases, by exactly the proper dietary and other measures, so that sometimes even recurrent lesions will melt away and metastases disappear, it is unreasonable to expect, with our present knowledge of this line of practice, to check the disease readily in the many cases now recognized as surgically hopeless, varying from 50 to 80 per cent. of all those affected. As early lesions in the breast, in which my

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experience mostly lies, may certainly be made to disappear and remain absent indefinitely, so it is hoped and believed that as the proper principles of living and medical treatment are recognized and applied, there will be a steady diminution in the morbidity and consequent mortality of cancer. And as scientific study proceeds along metabolic lines it is quite possible that primary cancer of internal organs now so fatal, will share in the better understanding of its nature and cause.

Cancer, that is the localized tumor or mass which we recognize as such, undoubtedly begins in some particular locality as a local disease. But, as Ribert says, "no one has ever seen the beginning of mammary cancer," and no one knows just how the first change takes place from a normal to a malignant cell; and yet undoubtedly there is a time and cause of the same. But how does it occur?

The laboratory has excluded about every possible cause except faulty metabolism,

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and the more the reported findings along this line are studied and analyzed, the more evident does it appear that here will be found the solution of the very serious problem of the prevention and cure of cancer, as I have shown elsewhere. The agitation in regard to the very early recognition of cancer is most laudable, but an agitation to discover the basic cause which leads up to tumor formation is far more desirable. To merely attack or cut out the local manifestation of the disease, the tumor, while leaving the primal cause still operative, to produce new lesions or a recurrence, which so commonly occurs, seems about as sensible as to remove surgically, one after another, the late cutaneous or other lesions of syphilis.

Statistics have shown conclusively that cancer mortality is steadily increasing with the advance of civilization. Primitive people, living simple lives, largely on vegetarian products, are known to be almost if not entirely free from cancer, but as they

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mingle with foreigners and adopt their ways of eating and living, the disease appears more frequently in them.

All along the past one hundred years one may find repeated declarations in favor of a constitutional cause of cancer, largely based on dietary errors and violation of hygienic living. Such statements have been repeatedly made by surgeons and those who knew cancer well, and realized how relatively impotent purely surgical measures are to stay its increasing mortality rate, now reaching about 90 per cent. of those once affected: Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Benecke, Esmarck, Oldehop, Sir Arbuthnot Lane and latterly William J. Mayo, have all spoken in no uncertain terms along this line of thought; but their views have received little or no attention, and the craze for surgery has seemed to blind the eyes of all.

The actual details of the non-surgical treatment of cancer cannot be given in a

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brief article, they are often so complex and far-reaching in connection with faulty metabolism. There is, of course, no single remedy, nor ever will be, which will cure the disease; its very nature precludes this. Each cancer case is a study by itself, requiring careful attention to details in very many directions, relating to every phase of life. An individual with an ideal metabolism will never develop cancer.

While a diet devoid of animal protein is the first requisite when cancer is threatening or has developed, this is hard to enforce for a long enough period, and many patients find it difficult to adjust it satisfactorily. There is need, therefore, that the physician should understand the subject well, and by constant inquiry and direction see that the patient takes a proper and sufficient number of calories, rightly apportioned in vegetable protein, carbohydrates, and fat; the latter may be largely made up by butter, of which a quarter of a pound daily furnishes 800 calories.

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The medical treatment of cancer may be as varied as are the possibilities of metabolic disturbance, and also cannot be briefly detailed. But all measures lie mainly along the line of securing proper assimilation and elimination. Long observation and innumerable quantitative analyses of the urine of cancer patients, which has been measured daily for weeks and months, show that the solids excreted in this way are always deficient in quantity, often being not one half of that required by the body weight of the patient; the urine is also commonly deranged in respect to the proportion of some of its many ingredients. A weekly complete volumetric analysis is therefore a valuable guide to the therapeutic measures which correct these errors.

Elimination by the intestinal tract is also found to be almost invariably at fault in cancer patients, even in the very earliest stages. So true is this that Sir Arbuthnot Lane has rightly remarked that one of the

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terminal results of intestinal stasis may be cancer. So universally common is this condition that it may be seriously questioned if the toxins produced by the millions of micro-organisms generated through intestinal stasis and fecal putrefaction may not be the real, incidental cause of the disease, through derangement of the character of the blood stream. This is a matter which should be very carefully attended to; it is not enough to give occasional cathartics, but by a most careful and repeated supervision to secure that there shall be at least one movement of the bowels daily, as near normal as possible. These may seem homely details, but as in the surgery of cancer minute attention to little things is essential, so in the management of the dietary and medicinal treatment success can be achieved only by the most exact attention to every item relating to the health and perfect functioning of the system.

Of the particular measures of service in the non-surgical treatment of cancer it is

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impossible to speak fully, for from first to last they may include a great variety of remedies. Alkalies are always of service, especially the salts of potassa, acetate, citrate and phosphate. Iron is commonly called for, in large quantities, and vegetable tonics and alteratives. Thyroid is often of value, and there is reason to believe that trypsin and amylopsin are of value, when used in connection with a vegetarian diet.

Locally much can be done by various measures, both to remove the morbid growth and even to benefit ulcerating surfaces. The *x*-ray and radium have certainly proved efficient in suitable cases, and thorium paste, when rightly used, is most valuable in modifying and removing diseased epithelial tissue, etc.

While surgery may have its function to perform in some cases of cancer, it has too long been a mistake to delegate the disease wholly to the surgeon, certainly unless suitable measures are adopted to overcome

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the constitutional tendency, which if left unchecked tends to reproduce its *local product,* the malignant new growth, in the scar or elsewhere, as so constantly occurs.

It is high time to revise our views as to the true pathology of cancer, and in the light of modern studies on metabolism and nutrition to seek to solve the cancer problem by other measures than the knife, which has thus far failed to check the steadily rising mortality of over twenty-five per cent. since 1900, according to the United States Mortality Statistics.

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CHAPTER X

WHAT DOES THE PATHOLOGY OF CANCER TEACH AS TO ITS CURE?*

Pathology is defined by Stedman as "The branch of medical science which deals with disease in all its relations, especially with its nature and the functional and material changes caused by it." The Standard Dictionary has it: "The branch of medical science that treats of morbid conditions, their causes, nature, etc."

The word "pathology," as related to cancer, has of late years been grossly abused, and confined almost exclusively to the histologic changes found in the diseased tissue, with no recognition of the pathogenesis or true pathology of the disease. In

* Read before the Academy of Pathological Science, New York, April 26, 1918.

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this way a very narrow conception of cancer has been fostered, and it has been too generally looked upon as a wholly local disease, which can be overcome by excision of the offending mass. A correct and broader pathology, however, should look into the constitutional derangements which lead to the formation of the local lesion, the *product* of some deep-seated metabolic error. As I have remarked elsewhere, "from the enormous work which has been done on cancer with the microscope and test tube, it would seem sometimes that research workers have become somewhat myopic, and are still not sufficiently far-sighted to recognize the true value of statistical studies and clinical observation."

In view of the steady, startling and distressing rise in the death rate from cancer, as shown in the recently published government volume on the "Mortality from cancer and other malignant tumors in the registration area of the United States," is it not wise to stop and consider what it

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really means, and if there is any way to arrest this progressively increasing morbidity and mortality? For, while the death rate of tuberculosis has fallen almost 30 per cent. since 1910, that of cancer has risen in 1916 to 81.8 per 100,000, or an increase of 29.84 per cent., more than that of any other disease! The mortalities of the two diseases have therefore approached each other almost 60 per cent., and if the rate of both continue the same, the deaths from cancer will quite exceed those from tuberculosis in 16 years more.

Is it not well, therefore, to stop and consider whether there is not possibly something wrong in our conception of cancer and its past and present treatment? The wonderful results of a proper medical treatment of tuberculosis, including diet and hygiene, have succeeded in reducing its mortality very greatly; whereas the neglect of a proper medical treatment of cancer, including diet and hygiene, and the reliance on surgery or radium to simply try

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to remove the offending mass, without correcting the underlying condition or cause, has resulted only in a steady increase in the mortality from this distressing malady.

It is therefore high time for us to study the true medical pathology of the disease. It is time to look seriously into the causes which appear to have accompanied its increase in various localities, and the conditions of life which have been observed to be associated with cancer. It is time to test out intelligently and thoroughly a line of dietetic, hygienic, and medicinal treatment comparable with that which has produced such brilliant results in tuberculosis. Unless this is done faithfully the deplorable, acknowledged, ultimate mortality of about 90 per cent. of those once attacked by malignant disease will not be lowered.

The enormous amount of study and vast sums of money which have been expended on the laboratory study of cancer have indeed taught us much in regard to the disease, but largely along *negative* lines. In

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order that we may understand fully the basis on which our present study rests I can not do better than to quote what I have said in a former article.* The results of laboratory and other study of cancer, which are pretty well conceded by those who know most about the disease, may be grouped under two heads, *negative* and *positive,* eight of each.

A. *Negative* results of laboratory and other study.

1. Clinically and experimentally cancer is shown to be *not* contagious or infectious; although under just the right conditions, certain malignant new growths can be inoculated in some animals of the same species, but not in other species, and human cancer can not be transplanted on animals.

2. Although micro-organisms of many kinds often have been found and claimed as the cause of cancer, there has been no

* The real cancer problem. *Medical Record,* March 17, 1917.

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concurrence of opinion in regard to them, and it is now pretty conclusively agreed that cancer is *not* caused by a micro-organism or parasite.

3. Cancer is *not* wholly a result of traumatism; although local injury may have much to do with its development in some particular locality, even as in connection with the late lesions of syphilis.

4. Cancer is *not* hereditary in any appreciable degree; although some tendency in that direction has been demonstrated in certain strains of mice.

5. Occupation has *not* any very great influence on the occurrence of cancer; although it is more frequent in some pursuits than in others.

6. Cancer is *not* altogether a disease of older years; although its occurrence is decidedly influenced by advancing age.

7. Cancer does *not* especially belong to or affect any particular sex, race, or class of persons.

8. Cancer is *not* confined to any location

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or section of the earth, but has been observed in all countries and climates.

But while laboratory and other investigations have not demonstrated any single cause of cancer and have yielded only negative results, they have, by elimination, cleared the way for a study of its cause along other lines, which are bright with promise. They have also established certain facts which confirm the views which from time to time have been briefly expressed by many who were best acquainted with cancer; namely, that, because of its constant recurrence, and from the failure of surgery to check its rising mortality, it must be of a constitutional nature, intimately associated with dietary or nutritional elements, as I have elsewhere shown.

B. The *positive* results of laboratory investigation are more encouraging:

1. We know now that the local mass, which we call cancer, represents but a deviation from the normal life and action of

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the ordinary cells of the body. These once normal cells for some as yet unexplained reason, take on an abnormal or morbid action, with a continued tendency to a malignancy which invades and destroys contiguous tissue, and is associated with a progressive anemia which destroys life.

2. Microscopic study has shown that there is a certain change in the polarity of cells about to be cancer-genetic, with an altered relation of the centrosome to the nucleus. These changes have been well attributed to an alteration in the enzyme contained in the cell, which further depends on the nutrition of the cell as influenced by a faulty metabolism of food elements.

3. The exclusion of all other possible causes leads us naturally to look to a disordered metabolism as a cause of the disturbed action of the hitherto normal cells; and we find much to confirm this view both in laboratory studies on the biochemistry of cancer, and also in clinical and statistical observations.

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4. The blood in advancing cancer has repeatedly been shown to exhibit many manifest changes, which indicate vital alteration in the action of the organs which form blood, and so control the nutrition of the body and its cells.

5. Laboratory and clinical evidence demonstrate that the secretions and excretions of the body, both in early and late stages of cancer, exhibit departures from normal which deserve consideration. Although none of these have as yet been established as pathognomonic of cancer, they nevertheless indicate metabolic disturbances which influence the nutrition of the cellular elements, and so these secretory and excretory disturbances are of undoubted importance in connection with its causation.

6. As all healthy cells of the body, by their catabolism and anabolism contribute a hormone or something to the general circulation, so experimental evidence shows that the cells of a fully developed cancer mass secrete a hormone or something

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which is poisonous to animals, and which probably hastens the lethal progress of the disease.

7. Repeated laboratory experiences have demonstrated, in a most remarkable manner, the absolute controlling effect of diet on the development of inoculated cancer in mice and rats, so that the process was inhibited almost entirely with certain vegetable feedings.

8. We thus see that as the laboratory has eliminated the local nature of cancer, it has also, in a measure, established the fact that there are medical aspects of the disease which further studies will show to be of the utmost importance. These all tend to demonstrate its constitutional origin, that is, its relation to deranged metabolism, now recognized as the basis of so many diseases.

C. But *clinical* and *statistical* studies come in with overwhelming force to confirm the correctness of this position.

1. We have already seen that with utter medical neglect the death rate of cancer

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has steadily and greatly increased in the United States, of late years, in spite of the prodigious advances in surgery during the same time. This is also true in all the countries from which we have any accurate statistics. We know also that tuberculosis as a result of careful medical attention, has *decreased* in mortality, by almost the same percentage as cancer has *increased.* The same is reported by reliable observers all over the civilized world.

2. Any number of observers, in many lands, have recorded the almost entire absence of cancer among aborigines, living simple lives, largely vegetarian; they have also shown the definite increase in the disease, and in its mortality, in proportion to the adoption of the customs and diet of so-called modern civilization by the same aborigines.

3. This increased cancer mortality seems to depend upon the altered conditions of life attending advanced civilization, particularly along the lines of self-indulgence

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in eating and drinking and indolence.

4. Statistics from many countries show that increase in the consumption of meat, coffee, and alcoholic beverages, appears to be coincident with a very great and proportionately greater augmentation of the mortality from cancer.

5. Clinical observation has time and again shown the effect of specific nerve strain and shock in the development of cancer; and there seems to be little question but that the enormous nerve strain of modern life is an element of importance in this direction, both through metabolic disturbance, and by direct action on living cells.

6. At present no clear demonstration is possible of the direct method by which errors of metabolism effect the changes in cells to which we give the name malignant, any more than we know how other alterations on the body are produced, such as arterial degeneration, bone changes, obesity, etc., which are recognized as due to metabolic derangement.

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7. The results which have been observed in connection with the starvation of cancer, by ligature of vessels, illustrate the relation of the blood supply to growing cancer.

8. Finally, the repeated observation and report of the spontaneous disappearance of cancer, by careful and competent medical men, shows that conditions of the system may arise which are antagonistic to malignant growth, even when it has begun to take place; just as there are other conditions of the system which favor the aberrant action of previously normal cells, resulting in cancer.

The medical aspects of cancer thus loom large, and appear in quite a different light from that in which they have been commonly viewed. We now begin to see some of the reasons why cancer is not primarily a surgical disease, and some of the lines along which observation and investigation should proceed, namely; biochemistry, secretory and excretory derangements, metabolic disturbances, diet, etc. The sub-

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ject is too new a one to afford a great amount of corroborative proof at present, other than the long personal experience of the writer and others, who have seen tumors disappear under means other than surgical, *x*-ray and radium. More clinical and laboratory investigations of human beings are needed, and not only simply microscopic studies and experiments on animals, valuable as these have been in the advancements of medical science in connection with other diseases.

The true study of the pathology of cancer is thus seen to be a much broader field of investigation than simply histological and test tube researches, and inoculation experiments on animals. It should look into its causes. It covers a vast ground: 1. The nosological relations of the disease. 2. Its ethnological and geographical distribution. 3. The progress of civilization in disturbing the normal course of human life. 4. The changes in diet and nutrition which lead up to the various derangements

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of the system, involving the growth of healthy and diseased tissue, including tumors. 5. The biochemistry of the system, with the blood changes which precede and accompany cancer. 6. The share of the lymphatic system in the disease. 7. The errors of metabolism leading to cancer, as shown by derangements in the secretions and excretions of the endocrinous and salivary glands, kidneys, intestines, etc., etc. 8. Indeed the proper and careful study of the pathology of cancer widens out into the broadest conception of human life. All this is quite different from the commonly accepted view, which regards the tumor as a chance malgrowth, only requiring the knife to remove it, without any thought or attempt to reach and eradicate the cause, and prevent a relapse, which occurs in such a large proportion of cases.

Time does not admit of a full consideration of any of these points, much less the presentation here of the corroborative facts demonstrating the constitutional re-

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lations of cancer, all of which have been given pretty fully in the books referred to. But I will endeavor to briefly direct your attention to some of those which have a practical bearing upon the prophylaxis and cure of cancer. We will, therefore, very briefly consider the points above mentioned in order, and I hope to satisfy you that cancer is more than a strictly local disease and that the local lesion is but the product of a preceding and continuing constitutional disorder, which must be met and altered if we hope to make any improvement in its frightful morbidity and mortality. Also I trust that all will recognize the futility of hoping that the mere excision of the offending mass will effect a permanent cure in any large proportion of cases.

I must here remind you that, according to the special report on "Mortality from Cancer and Other Malignant Tumors in the United States, in 1914," epithelioma, or cancer of the skin, furnished only about 3 per cent. of the deaths, and cancer of the

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lip only 0.6 of the deaths, among a total mortality of 81.8 in each 100,000 of the population. And yet in all the propaganda regarding the value of surgical work in cancer great emphasis, with illustrations on the screen, has been laid upon the urgent necessity of very early surgical treatment, as exemplified in cancer in these localities. It is granted, of course, that the epithelioma in these situations can often be completely extirpated, as it is primarily a local derangement of superficial cells. If taken very early, therefore, a permanent cure may be made, often with disfiguring scars; but the same can be accomplished by other means with much less deformity, if any. It is, therefore, quite unfair to use this as an argument for the surgical treatment of real carcinoma, which metastasizes and commonly recurs, locally or elsewhere, with lethal results.

Turning now to the true pathology, including pathogenesis, of cancer in general, we will consider,

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1. *Its nosological relations*:

While cancer is so commonly regarded as a surgical disease and is generally referred to the surgeon for excision, we have already seen, and I hope to show more definitely later, that it is truly a constitutional affection, with the local lesion as a *product* of the same, quite as are the local lesions of gout, syphilis, tuberculosis, arthritis deformans, rickets, etc. It is interesting to note that over a quarter of a century ago the founders of the *Index Medicus* placed cancer among the diseases of metabolism, along with gout, obesity, chronic rheumatism, diabetes, and a few conditions of minor importance, and to the present day it is so ranked. All along during the past one hundred years many surgeons, recognizing the inadequacy of the knife to permanently eradicate cancer, have spoken in no uncertain language regarding the medical relations of the disease and its dependence upon diet, mode of life, etc., etc.

Lambe, over one hundred years ago,

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wrote clearly in regard to the causation of cancer from luxurious living. He also adduced strong proof to show the effect of diet in curing certain cases of undoubted cancer of the breast and uterus, the diagnosis of which was confirmed by prominent surgeons of the day, several of whom endorsed the vegetarian diet.

Abernethy soon after wrote pointedly regarding the constitutional origin of tumors and says: "There can be no subject, I think, more likely to interest the mind of the surgeon than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings with it nothing but disgrace, if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance."

Not to weary you unnecessarily with quotations from the many surgeons and others

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who have recognized and published their belief in this view of cancer, I will merely mention some of the names of those I have quoted in my books, Walshe, Willard Parker, Sir Astley Cooper, Sir James Paget, Merriam, Venus and Isenberg, Haig, John Murphy, and William Mayo.

We have thus seen that nosologically cancer belongs rightly to the medical rather than the surgical branch of the profession.

2. *Its ethnological and geographical distribution*:

Cancer exists all over the world, but in varying degrees, and, as we shall presently see, modern civilization has had very much to do with its prevalence and mortality in different regions. The disease seems to be relatively less frequent among the dark skinned races than among the white, and is exceedingly rare among aborigines.

3. *The progress of civilization* in disturbing the normal course of human life:

Time does not permit even a brief state-

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ment of the recorded facts which I have quoted elsewhere in proof of the profound influence of civilization in the increase of cancer. One investigator of statistics has remarked that "the mortality from cancer is in a direct ratio to the intensity of human civilization." It is to be remembered that the advance of so-called modern civilization, including the facilities of transportation and cold storage have brought from far and near an innumerable number and variety of articles for food and drink, including condiments, which bear no relation to the few simple articles formerly consumed. In the combination and preparation of articles of food also, so-called civilization and refinement have devitalized many foods and have made the greatest departure from the simple life of the aborigines, who are free from cancer. Moreover, with the increasing ease and wealth more and more individuals of all classes are sharing unnecessary and often harmful indulgences, more and more freely. The

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hurry and strain of modern life, with its prodigious nervous activity also aid greatly in disturbing normal metabolism, upon which depends the maintenance of health, as well as acting directly on the vitality of tissue cells.

4. *The changes in diet and nutrition* which lead up to the various derangements of the system, involving the growth of healthy and diseased tissues, including tumors.

That the diet of highly civilized communities has changed immensely during the last fifty years, since cancer has been on the steady increase, there is no doubt. Luxury and indulgence have taken the place of simplicity and hard work, even among the poorer classes, and it has been abundantly shown that cancer is much more frequent relatively among the rich and idle classes than among the poor. This matter of diet and nutrition is a large subject which cannot be dwelt on here, and I must refer to data which I have presented else-

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where, which show plainly that overindulgence in animal proteids, coffee, and alcohol leads to the development of the cancerous tendency.

5. *The biochemistry of the system, with the blood changes* which precede and accompany cancer. This is also a large subject which I have tried to develop elsewhere, and which can be here only lightly touched upon.

If we believe that all growth, both normal and malignant, depends upon the carrying on of a proper metabolism in the body, the biochemistry of the system is of the utmost importance in connection with cancer. Unfortunately this has been studied but little along certain lines, especially in what may be called the precancerous stage of the disease. All experience has shown that cancer has certain relations to conditions which are associated with faulty metabolism, such as obesity, gout, diabetes, etc., and a careful study of cancer cases, both in their early and later stages, dem-

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onstrates that derangements in the urinary and intestinal secretions are constantly present, which indicate a faulty performance of the organs concerned in nutrition, including the endocrinous glands.

The blood in cancer has been studied mainly in reference to its cellular elements, and many very well defined changes have been observed, as I have repeatedly verified. But very little has been done in regard to its plasma, which latter is of most vital importance. For it is to be remembered that the blood corpuscles themselves are formed from the plasma, which receives not only the nutritive material absorbed from the alimentary tract by the venous radicles, but also the chyle, representing both alimentary products and those obtained from the tissues by catabolism.

There is great need of laboratory studies along these lines, and also on the alkalescence of the blood, which is found to have marked diminution in advancing cancer.

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6. *The share of the lymphatic system in the disease.*

This is well recognized clinically and pathologically in connection with metastasis, but just what element of the cancerous tissue is transported or how the system is finally affected so as to produce general carcinosis, has not been fully demonstrated. Pathology has not thus far helped us as to the cure of cancer in this any more than in other lines mentioned.

7. *The errors of metabolism leading to cancer,* as shown by derangements of the secretions and excretions of the endocrinous or ductless, and salivary glands, kidneys, intestines, etc.

Many of these errors actually observed I have called attention to in my various writings and time will hardly allow more than a brief mention of them. Almost invariably there will be found a history of chronic constipation in patients with incipient and advancing cancer, long before the use of morphine, which, of course,

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aggravates the condition. Thus the auto-intoxication produced by the millions of micro-organisms generated through intestinal stasis and fecal putrification are a real and efficient element in the production of cancer.

Most careful volumetric analysis of the urine will almost certainly show more or less gross deviation from the normal standards of health in these patients. This is not in the way of albumen or sugar but along biochemical lines, relating especially to the partition of nitrogen and sulphur. The urine of these subjects seldom exhibits the normal amount of excretion of solid elements called for by the weight of patients, as I have observed in cases where the total daily quantity has been measured for months, and carefully analyzed weekly: often it is not over one-half the correct amount. As the cancerous mass improves under appropriate dietary and medical treatment these errors disappear.

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The salivary secretion is almost always very acid, early and late in the disease, as shown by careful testing before and after eating in any number of cases; and this also becomes normally alkaline or neutral in the progress of treatment, with proper diet and prolonged mastication, or Fletcherism, combined with proper medication for the cancer.

The errors of excretion of the ductless glands and their relation to cancer is a more difficult proposition to determine, but a number of observers have insisted on it, and from what little we know of the influence of these glands on metabolism and health there is every reason to believe that they may be of importance in this connection. The benefit often seen from the administration of thyroid extract in certain cases of cancer would certainly look this way.

We see thus that a study of the true pathology of cancer is quite something more than the mere investigation of the

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histology of the diseased tissue through the microscope, or inoculation experiments on rats and mice, on which so much labor and money have been expended. While these are of a certain value, by means of the *negative* results obtained, they show us that to understand the true pathogenesis of malignant tumors we must patiently study the individual in whom the diseased tissue appears. We must apply all possible acumen, observation, and logic, with a perspicacity which can determine the relation of cause and effect. We must know perfectly the person affected in every aspect, and by this knowledge must so direct the conditions of life that, with a restored catabolism and anabolism, the metabolism may proceed in a perfect manner, and the body tissues be formed correctly. I realize that this is rather a difficult and optimistic proposition which can by no means be always secured; but from long experience I am sure that this is the proper line along which to study the pa-

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thology and pathogenesis of cancer, and that with it we can obtain far better results than with the knife.

From what has preceded we see also that the study of pathology, as commonly thought of, has taught us little or nothing positively in regard to the cure of carcinosis as a disease, very prone to recur; and all recognize that its only therapeutical suggestion is to attempt the removal, by surgery, the *x*-ray, or radium, of the offending mass, which is only the *product* of a long preceding systemic derangement, without any attempt to meet or remove the underlying cause. As well might one attempt to remove surgically the local lesions of tuberculosis, syphilis, gout, arthritis deformans, or rachitis, with expectation of permanent relief!

The theory of Cohnheim in regard to the suppositious "embryonic rests" as the cause of the local lesions of cancer has unfortunately afforded much support to its surgical treatment, as a local affec-

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tion; but later studies have failed to sustain this claim, which by no means answers all the requirements as to the pathology of the disease.

We have, therefore, by exclusion to fall back upon the constitutional nature of the disease, as has been foreshadowed by so many eminent medical men, including surgeons, during the last hundred years and even up to the present time, as previously indicated. This line of investigation has as yet had relatively little attention paid to it, and is the pathology of the future. It behooves the medical man to realize that cancer does not necessarily belong to the surgeon, but that there is a vast field of clinical and chemical laboratory research, which looks forward with bright hopes to a gradual control of the cancer scourge, even as medical wisdom has brought about a gradual but brilliant control of tuberculosis.

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CHAPTER XI

THE MEDICAL TREATMENT OF CANCER*

The glamor of surgery has, during the last two decades, quite excluded from the minds of the medical profession and laity much thought of the medical treatment of cancer. Under previous medical care these cases had commonly been seen to go from bad to worse, with a considerable mortality, until the disease was considered incurable, and of late the belief has been that the only hope is offered by surgical removal. Then the immediate result of well-conducted operations often seemed favorable for a time at least, with the possible expectation that with a recurrence of the malady there was still hope that

* Address before the Third District Branch of the New York State Medical Society, May 3, 1918, and the Chittenden County (Vermont) Medical Society, May 8, 1918.

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further operations might succeed in eradicating the disease; and for the last two decades surgery has had full sway.

But, alas, both the medical profession and the laity have been blind to the steady and really alarming increase in the mortality from cancer since 1900, as shown by the statistics published by the United States Government. In the year 1900 the mortality from cancer was 63 per 100,000 population, and in 1916 it had risen to 81.8, or 18.8 more persons dying from the disease in each 100,000, an *increase* in the death rate of 29.84 per cent.! During this same period the mortality from tuberculosis has fallen from 201.9 to 141.6 persons in each 100,000; a *decrease* of 60.3 persons, or 29.86 per cent., under careful medical treatment!

There could hardly be a more eloquent argument than this for the application of medical acumen to the study and treatment of cancer. It must be remembered that the results in tuberculosis have not

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been attained through the application of any one specific remedy, for tuberculin has played but a small and uncertain part in the improvement of its vital statistics, which have been secured mainly through nutritional lines of treatment.

In the same manner, after the enormous amount of laboratory, experimental and clinical work done in cancer, which has yielded only *negative results*, we cannot expect to find any specific remedy for cancer, such as mercury is for syphilis, quinine for malaria, antitoxin for diphtheria, etc., and we must search for its true pathology and treatment along medical lines: for now it is recognized on all sides that the knife does not cure cancer, but only removes some of the *products* of disease.

Unfortunately the historical path of cancer is strewn with the wrecks of blasted hopes regarding various remedies, quack and other, whose virtues for the cure of the disease have been heralded

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for a while, only to sink in oblivion, to the sad disappointment of trusting sufferers from this dire malady. Various serums have been tried, with varying success in certain cases for a while, but these too have gone the way of the others. The reason of this is plain, because from the real nature of cancer they could not be expected to alter permanently the constitutional conditions occasioning the malignant growth. The *x*-ray and radium do seem to have considerable power in altering and often removing morbid tissue, when it is accessible; but, of course, they cannot reach the underlying cause, which produces and reproduces the same lesions, any more than can surgery.

We are therefore thrown back upon seeking to discover what is this underlying cause of malignant new growth, and determining what measures can be employed to so alter the system that this departure from normal nutrition shall not occur. For it is acknowledged by all that

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cancer represents only a deviation from the normal life and action of certain ordinary cells of the body, which were once healthy, but which for some reason, difficult to understand, take on an abnormal or morbid action: with this there is a continued tendency in them to a malignancy which invades contiguous tissue, associated with a pernicious anemia which in the end tends to destroy life.

It would lead us far beyond the proposed limits of this paper to attempt to at all study the underlying causes of cancer, which have been pretty well considered elsewhere. But in order to fully understand what is to follow brief mention may be made, somewhat dogmatically, perhaps, of the grounds upon which the medical treatment of the disease is justified and is to be based.

First we may very briefly examine the claims that cancer is a wholly local disease, which may be eradicated by surgery, if taken early enough.

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In most if not all surgical writings cancer is regarded, primarily at least, as a purely local affection, and the subject of a possible constitutional cause and the reason of its continued malignancy are seldom even alluded to.

Cohnheim suggested that the origin of cancer was in what he called "embryonic rests," or wrongly placed prenatal epithelial tissue elements. This theory is more fanciful than satisfying or demonstrable, and it is difficult to understand why such "embryonic rests," after remaining so long quiescent, should suddenly take on such malignant and destructive action; unless the blood stream has become so altered as to furnish a proper pabulum for their rampant growth.

Ribert later developed a somewhat similar hypothesis, but neither of these theories have been substantiated by others, and no one has ever seen cancer develop from such cells; although it is granted that the local lesion of carcinoma must start in some par-

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ticular cell or cells which take on morbid action.

Failing to find an idiopathic local cause for the origin of malignant tumors, recourse was had to a parasitic theory, and the most diligent search has been carried on by innumerable observers to discover the parasite. But as one micro-organism after another has been proclaimed, its etiological relation has been disproved by other observers, and now few scientists believe that cancer is caused by a living parasite. Many of these latter are certainly found on ulcerated lesions and undoubtedly contribute to the later destructive process, but none have ever been demonstrated to cause such a new growth, in spite of most faithful experimentation. The fact that surgeons, nurses, or pathologists never acquire the disease from contact is pretty conclusive evidence that no such parasitic cause exists, for cancer is certainly not contagious or even inoculable.

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Still contending for a local etiology of cancer very many have insisted upon local irritation as the efficient cause for its occurrence. The arguments and illustrations for this are indeed strong, but when carefully analyzed they are found quite insufficient to account for the real nature of the trouble; although it must be accepted that in many instances it acts as the *exciting cause* of the special local lesion. Thus, few can question that cancer of the lower lip may be excited by pipe smoking, cancer of the mouth by decayed and irritating teeth and betel chewing, etc. Many claim that cancer of the breast is the result of a blow or pressure, cancer of the uterus from laceration of the cervix, cancer of the stomach from a peptic ulcer, etc. But for the numerous instances of internal cancer, as of the kidney, bladder, brain, etc., no such cause can be predicated.

Moreover, when we really study the matter, and consider how relatively few cases

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of cancer of the lip occur in smokers, how almost every woman at some time may have a blow on the breast, how few cases of cancer of the mouth develop in those with bad teeth, etc., we readily see that there must be some other element than the local irritant to induce a true cancer, which causes a local lesion to run such a malignant, persistent, and fatal course. It is quite as reasonable to ascribe a syphilitic gumma, or a tubercular joint, or a gouty toe to local injury, although that may have been the immediate exciting cause of the disease in some particular locality.

Heredity has been blamed for the advent of malignant disease, but statistics of Life Insurance Companies show the contrary, and a careful, recorded, clinical study of intelligent private patients with cancer fails to show any greater percentage of ancestral occurrence than is accounted for on natural grounds. Thus, every one has many ancestors and near

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relatives, some of whom may have developed the disease from the same causes, which will be considered later. The very rare instances of "cancer families" which have been recorded may be easily explained in this way; namely, that the persons probably lived the same kind of life, and were subjected to the same systemic disturbances as those which produced cancer in the person under consideration.

In the absence of local or hereditary causes for cancer, we are forced to the belief that there is some constitutional or systemic change in the composition of the nutrient fluids of the body which causes certain cells or portions to take on such a morbid change. There is no more difficulty in understanding the local phenomena of cancer than there is in understanding why other diseases seize upon special localities. Thus, in gout the great toe is commonly affected, or the *tendo Achillis*, etc., a syphilitic new growth may occur in various sites, even in the brain or ar-

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teries, a tubercular lesion may develop here or there without any known cause, etc. What the first changes are, and why they occur, will probably always be a mystery.

It would carry us too far away from our immediate subject to attempt to consider fully the pathological changes which go on in normal cell life as compared with those observed in cancer tissue, but a brief mention of some important points can be made with advantage.

Karyokinesis, mitosis, or indirect cell division, is at the bottom of all growth, both normal and malignant, and the two classes of growth differ only in their methods and activity.

In normal tissue growth and reproduction the nucleus with its chromosomes and the centrosome divide equally, one half going to each new cell, into which the mother cell divides, the centrosome being the dynamic or controlling center for the reproductive activity of the cell.

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In healthy tissue this cell proliferation proceeds in an orderly manner, forming normal, homologous structures: in the case of the skin, hair, and nails these are removed mechanically. In internal structures, while new cells of homologous nature are thus reproduced by anabolism, the older and effete cells are removed by catabolism, the two processes together constituting metabolism. The elements of which these effete cells are composed are split up into their component parts and carried off by the blood or lymph stream, and either discharged as effete substances or re-utilized in the system along physiological lines.

In morbid or malignant growth of epithelial or gland cells, constituting cancer, there seems to be some error in the division of the elements of the cell, and the centrosome or controlling center of reproduction is lost or deranged in the offending cell or cells, which then proceed on their untoward course of destruction.

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These multiply more or less rapidly and form a mass of heterologous tissue, incapable of being utilized in the system, invading contiguous tissues and tending to ulceration. Whether this original error in mitosis is caused by irritation, physical or chemical, or from loss of nervous control cannot be told. There seems to be some reason to support the view advocated by Williams, namely, that tumor formation and growth are but forms of agamogenesis, or non-sexual production of cells, distinctly related to the decline in growth of the body in general. Hence while the forces of growth, development, and reproduction are in greatest activity in early life the tendency to this disease is relatively small: but when growth declines and nutrition is relatively slow the cells undergo gemmation, owing to perverted nutriment, and thus hyperplasia and not inflammation is the starting-point of every neoplasm. The interesting thought in regard to this curious tendency

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to cell misbehavior is that it is sometimes spontaneously arrested, and can also be overcome by proper constitutional measures, as many testify.

To understand rightly how this can be accomplished we must very briefly consider some of the constitutional conditions observed in patients with cancer, even in early stages of the disease, and with increasing severity as it advances.

It may first be remarked that patients developing cancer often seem to be in such perfect health, even with ruddy complexion, that it is hard to convince them that the local lesion, suspected or discovered, can possibly be of the very serious nature which later developments prove.

As in surgery it is so strongly claimed that the very early recognition of cancer, and early operative interference are most important, so especially in regard to its medical treatment the best results are obtained when the disease is recognized early and proper dietary and medicinal treat-

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ment are rigidly enforced, as experience abundantly shows. However, during all the course of cancer, even to the end, the benefits of strict medical supervision are often surprisingly manifest. Every effort, therefore, should be made to establish the diagnosis early, and every endeavor should be maintained to see that each detail of treatment is carried out with absolute fidelity, even long after the original lesion has disappeared. Otherwise any laxness and return to the same conditions of life which caused the first new formation to develop can reproduce the disease in the original site or elsewhere.

To understand rightly the constitutional nature of cancer and the reasonableness of a medical treatment, brief reference must be made to some of the systemic conditions which have been established experimentally by the laboratory, and by clinical experience.

The blood has long been recognized as a factor of importance in connection with

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cancer, as is clinically manifested by the intense cachexia and anaemia commonly present and always strongly marked toward the end. Many studies have been made on the cytology of the blood in these cases, all confirming many radical changes in its solid elements, as I have constantly observed. Unfortunately there have been relatively few studies of the plasma of the blood, whereas it is from the plasma that the blood corpuscles are formed, and that is the principal agent in the development and nutrition of tissues, normal and malignant. For it is to be remembered that the chyle, conveying products of digestion, is discharged by the lymphatics directly into the venous blood current, and the venous radicles also absorb much of the nutritive material directly from the abdominal organs. The plasma, therefore, carries with it a varying quantity of partially assimilated material, to be oxidized in the lungs and slowly purified by the agency of the kidneys. There is great

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need of laboratory studies along these lines, and also on the alkalescence of the blood, which has been found to have a marked diminution in cancer.

The urine, reflecting the character of the arterial blood, has been extensively studied in cancer, and my innumerable volumetric analyses more than confirm all that has been observed. In some cases I have had the daily output of the urine saved and measured for weeks and months, and in some instances for over a year, often with complete volumetric analysis each week or two: and rarely is it found to be that of health. This does not refer to albumen or casts, or sugar, but in regard to its measured acidity, its mineral contents, urea, indican, etc. As an indicator of the manner in which metabolism is carried on, it is of the very greatest importance. Almost invariably the total amount of solids, excreted by the kidneys is found to be deficient in relation to the weight of the individual: this is constantly

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observed even in the very early stages of cancer. The output of urea is almost invariably diminished, often very greatly, as I have verified time and again in many cases.

The nitrogen partition has been found to be at fault by many observers, as also that of sulphur, the details of which have been elsewhere presented, with a great increase of neutral (unoxidized) sulphur, with indican, showing intestinal fermentation, as I have constantly observed. All this indicates errors in protein metabolism.

Imperfect intestinal excretion and constipation are almost invariably found in the subjects of cancer, even in its earliest stages, and long before, so that auto-toxaemia from intestinal fecal absorption and the products of microbic action must be looked upon as one of the elements of blood derangement which favors the development of malignant tissue.

The saliva is almost invariably found

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to be acid, even in early cancer, instead of alkaline or neutral, as I have noted in hundreds of testings made before and after eating in patients in the New York Skin and Cancer Hospital and in my office. As dietary and other treatment with proper mastication is carried on rightly, with improvement in the general condition and in the cancer mass, the saliva returns to its normal alkalinity, but with a tendency to relapse into an acid condition. I think I have never failed to find it acid in cancer of the deeper oral region.

It is interesting in this connection to recall that Mayo has remarked that cancer is apt to develop in regions exhibiting an acid reaction. Thus, while it is common in the stomach it is absent in the alkaline duodenum, and again common in the acid colon; it is also frequent in the bladder under acid conditions.

Time does not permit of further elaboration of the constitutional relations of cancer, such as the relation of the ductless

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glands to the disease, which has received considerable attention. But from the benefit which has been observed from the administration of thyroid extract and perhaps some other extracts in certain cases of cancer, it would seem that the endocrinous glands, which have such an influence on metabolism, are factors in connection with the genesis and cure of cancer.

That diet, good or bad, has a great influence on the formation and growth of tumors there can be no doubt, as has been shown by many observers. The subject is so large a one that it can hardly be more than touched upon here, but it is of immense importance in connection with the medical treatment of cancer. One need only recall the almost complete immunity from the disease which has been repeatedly reported in aborigines and in those living in countries or regions where the food is wholly or largely vegetarian. Also the reported increase of cancer mortality in proportion to the steady increase

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in meat eating in many countries and localities, as I have shown elsewhere. Some have also emphasized the relation of cancer to deficient or deranged supply of the mineral substances required by the healthy body, and of late much attention has been directed to the relation of vitamines to normal and diseased growth.

Not to dwell too long upon the many evidences of the constitutional or systemic relations of cancer, pointing to deranged metabolism as its basic cause, we will pass at once to the more practical matters relating to its prophylaxis and treatment.

First we must dwell very briefly on the dietetic relations of cancer which have been well established by research laboratories, statistics, and clinically. The details and references relating to these facts are given fully in the books already referred to.

Experimentally it has been found that mice living on rice cannot be inoculated with cancer. In another series of experi-

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ments 75 per cent. of inoculated white mice living on normal laboratory diet acquired the disease, while only 19 per cent. of those on a non-protein diet were affected; moreover the tumors in the latter in 30 days were hardly larger than those in the former in 10 days.

Statistically it has been abundantly shown that cancer mortality has increased immensely with an increase in the consumption of meat. Thus, in England, the amount of meat eaten per capita has doubled in the last 50 years and the cancer deaths have quadrupled. The same has been shown, though in a lesser degree, in Australia, and in many other countries. In the United States the mortality from cancer has risen almost 30 per cent. since 1900, while our yearly per capita of meat eating has increased steadily and greatly, so that a few years ago it was reported from Washington to be the enormous amount of 172 pounds, per capita, much more than in England.

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There is also strong statistical evidence that the continued increase in the consumption of coffee and alcohol has something to do with the rising mortality of cancer. Holland is shown to be the highest per capita consumer of coffee of any country in Europe, and the cancer death rate there in 1905 was among the highest, while Hungary was the smallest per capita consumer of coffee and the cancer mortality was only 39 per 100,000, or a little over one-third that in Holland. The people in the United States consume one-third of the total coffee produced, or more than Germany, Austria, Hungary, France, and the United Kingdom combined.

Clinically it has been shown by observers, all over the world, that cancer is practically unknown among the aborigines, living simple and mainly vegetarian lives, while the same people rapidly acquire the disease when they come in close contact with foreigners and acquire their habits, including the free consumption of meat.

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During a rather extensive trip through the Far East I was unable to see or even hear of any cancer, although I met a large number of medical men and made diligent inquiry regarding the same. As I wished to verify my views in regard to the rarity of the occurrence of cancer among those who lived on rice or other vegetarian diet, I visited very many civil, military and missionary hospitals, with a total of many thousands of patients, and ministering to many millions of population. In Japan, Korea, the Philippines, India, Siam, and Egypt, I met the same response, that cancer was rarely seen among those vegetarian natives. From many years experience with the disease in private and public practice I have so constantly observed the remarkable results of an absolutely vegetarian diet in controlling cancer, which results have been watched by many physicians, that the conviction is irresistible as to the influence of diet in this dire malady.

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If time permitted I could make quotations from a large number of prominent physicians and surgeons who fully bear me out in the claims here made. These statements have often been brief but conclusive in medical and surgical writings, and taken collectively leave little ground for debate. None, however, have heretofore attempted to gather together all the evidence already presented of the constitutional origin of cancer, and apparently little impression has been made upon the medical profession or the laity as to any other method of reaching the disease than by the knife. Nor has there been any attempt to formulate the measures which offer any particular hope of reaching and remedying the cause of the malignant growth. And yet quite recently Aebli, a Swiss physician, has shown very clearly by the analysis of large numbers of cases, both of those who had been operated upon and those who had been left practically alone, that even then the advantage of the

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knife cases as to longevity, is negligible. With a most careful, intelligent, and continued dietary and medical treatment it can be readily shown that the advantages of such a method of overcoming the disease far exceed anything which can be predicated of active surgery.

Moreover, if it can be established what are the underlying causes of cancer, and by what means these can be overcome, we have advanced a long way toward the prophylaxis of this dire disease. For it is recognized as certain, and shown by statistics that the knife can never control cancer, since after active propaganda as to early operation the mortality has risen so steadily and greatly, that it is now acknowledged by surgeons that 90 per cent. of those once affected die from its ravages. In the year following this active propagandism the United States Mortality Tables show that the percentage of deaths was nearly double that of the average of the five preceding years.

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In regard to the exact manner in which dietary and other errors in life result in such a derangement of cell activity as to produce malignant growth we are yet a good deal in the dark, and possibly we shall never know. But all evidence as to the constitutional cause of cancer points to metabolic derangement, caused in various ways, prominent among which are dietary errors, connected also with faulty action of one or more of the different organs of the body. Undoubtedly nervous shock or strain, insufficient bodily exercise, impure air, imperfect mastication, possibly microbic action and many other elements contribute to cause such systemic derangements as lead up to the faulty metabolism producing cancer.

The point to recognize is that the blood current which nourishes everything has in some way become so deranged, either in regard to its organic or inorganic constituents, that nutrition is not properly carried on, and certain cells take on an

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abnormal or morbid action, which we call cancer. If means can be found, dietary, hygienic, or medicinal, of restoring a perfectly healthy action of the system, and a normal or relatively perfect blood stream, the depraved cells again take on healthy action and even a retrograde metamorphosis can take place in tumors which have been already formed. This event experience abundantly testifies.

The elements in the medical treatment of cancer, and its prophylaxis have already been indicated in what has preceded, and little more need be said in closing. Each and every case of cancer is a study in itself, and much skill, medical acumen, patience, grit, and perseverance must be applied if true success is to be expected. While in surgery it is recognized that the results vary greatly with the skill of the operator, so much more in the medical treatment of cancer all the qualities mentioned are required. We have learned the lesson in regard to tuberculosis, whose

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death rate has diminished nearly 30 per cent. since 1900, while that of cancer has risen nearly 30 per cent. in the same period of time, the disease tuberculosis being constantly overcome in spite of the continued presence of the bacillus; let us learn it in regard to cancer, where no such microbic cause exists.

As you will recognize from what has already been said, diet is the most important part in the treatment and prophylaxis of cancer. Without exactly the proper diet, rigidly carried out for a long time, and even indefinitely, no good results can be expected. To aid in carrying this out a diet card has been prepared for my medical cancer clinic, in the New York Skin and Cancer Hospital, which I also use in private practice. These can be freely obtained by application to the Superintendent of the Hospital, in person or by letter.

While the diet on this card has been worked out by our dietitian it is not pre-

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sented as perfect, and changes can undoubtedly be made with advantage. The average daily ration represents 2100 calories, with about 140 of vegetable protein, and it is calculated for a patient of about 150 pounds, in bed or not taking active exercise. The rules given on the card are to be accurately followed. This has been used by large numbers of patients with most satisfactory results. Patients in private and public practice are frequently questioned as to their faithfulness in carrying out absolutely the requirements of the "green card."

But diet is not the only measure of importance in the treatment of cancer, although as stated it is the first, and most important, without which all else is in vain. Proper internal medication is always needed, and that continually over a long period of time, in order to secure and maintain a correct metabolic activity which is antagonistic to the cancerous tendency. As previously mentioned, if

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there is a relapse into the same systemic conditions which produced the original malignant tumor, there is no reason to expect that the same deadly process will not repeat itself.

The medicinal treatment of cancer is a hard subject to speak briefly about. As already intimated, there is no specific for cancer and probably never will be. Each case has to be studied most carefully, even week by week, and during prolonged treatment very many remedies may be required to meet various requirements, in order to make the metabolism correct and to keep it so.

To aid in this a constant and careful study of the urine is necessary. This relates to the total daily output, securing an efficient elimination of solids in proportion to the body weight, the actual volumetric acidity, the organic and mineral ingredients, etc., which have been presented fully in the volumes referred to. For this repeated and complete volumetric analyses

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are necessary. The importance of these methods can hardly be overestimated.

Much care must also be exercised in securing a full and satisfactory intestinal elimination, which is to be assiduously cared for and not left to the patient's discretion or treated in a routine or careless manner. There are many minor items in regard to the care of these patients which cannot be entered upon now, and have been treated of elsewhere, but it can only be stated that attention to the smallest details of life are essential to securing the best results in the plan of treatment under consideration.

It was stated a while ago that there was no specific for cancer and probably there would never be, but there is one remedy which has so continually proved of inestimable value that it should be mentioned. That is one of the salts of potassium, as has long been used by me, and more lately confirmed by several observers. This should never be neglected

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in handling these cases, and may be administered over long periods with advantage, alternated perhaps with various tonics from time to time. The salt I prefer and have used for forty and more years, is the acetate of potassium, in doses of from fifteen to thirty grains, generally combined with nux vomica and fluid extract of rumex root, given three times daily, half an hour before meals, well diluted. Fluid extract of cascara is commonly added, in doses sufficient to secure full and free daily action of the bowels. Iron and phosphatic preparations are also called for in most cases, even over long periods, and very many other remedies may be needed from time to time to render the metabolism correct.

Morphia is very commonly given to cancer patients, even soon after they have begun to experience pain, but this is very undesirable, as it interferes seriously with the action of the internal organs, and lessens the chance of recovery. In many

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cases I have found relief from aspirin, given even every two hours. This not only diminishes the neuritic symptoms, but even helps in the treatment by rectifying the rheumatic element, which is often a feature in cancer. In looking over my histories of cases it is interesting to note that practically no morphine has been taken by them, even in cases of recurrence after operations and those that have ended fatally. When under full and proper treatment, as outlined, there seems to be relatively little pain at any time.

I will not burden you with statistics showing the advantages of the medical treatment of cancer, as already outlined, nor with histories of cases. Suffice it to say, that in my long experience there is absolutely no comparison between the results thus obtained and those claimed by surgeons. In dozens of patients I have seen breast tumors which had been diagnosed as cancer, often by several competent surgeons, in whom the tumor has

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entirely disappeared and remained absent, when the patient had been faithful to treatment long enough. Some of these cases, which I have reported, date back thirty years and more, for some of whom operations had been arranged for by surgeons, and a number of them I have watched for 10 to 16 years and they have remained entirely well. I have reported two cases of uterine cancer, who had been refused operation by several surgeons, and had been proven microscopically to be very malignant, who have been perfectly well over two years, as testified to by the examination of others. A case of cancer of the bladder, treated also by fulguration, has remained well over two years, and one of the prostate improved marvellously, but was lost sight of. In two cases of cancer of the stomach, so diagnosed by others, the trouble seems to have disappeared.

It has been difficult in a single address to present satisfactorily so great and im-

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portant a subject as the medical treatment of cancer. But I trust that enough has been said to impress you with the fact that the disease has medical relations which offer more hope than the knife, especially if the case is taken strongly in hand from the beginning and the treatment continued faithfully and long enough. Already the subject has attracted attention everywhere, and during the past year there has been a singular dearth of surgical writings on cancer in the journals, and an increasing number of articles along the lines here considered. The good results are perhaps shown slightly in the Mortality Records of cancer by the New York City Board of Health, for the first six months of this year. During this period the deaths from malignant disease were 2480 against 2488, or eight deaths less from cancer than during the same period last year, whereas those of last year were 127 *more* than in the first half of the preceding year, 1916. This in spite

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of an increased population and an increase in the total number of deaths, amounting to 423, in the first half of this year, over the first six months of 1917.

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CHAPTER XII

PRECANCEROUS CONDITIONS

Heretofore the study of "precancerous conditions" has been confined almost exclusively to microscopical investigations, and the clinical observation of the occasional degeneration of certain originally innocent lesions into those of malignant character. The result of this has been that cancer has been looked upon as a wholly local affair, idiopathic, so to speak, with little or no regard to the causes which lead up to the transformation of previously normal tissue cells into those of disease, that is, to the basic cause of cancer.

The search has been persistently made for some extraneous cause, such as parasitism, but in vain. When the theory of "embryonic rests" was evolved this was eagerly seized on as a basis for cancer

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genesis; but soon all recognized that these alone could not answer the problem, as they existed in numbers in every one, and there must be some exciting cause which induces them to take on and keep such rampant action as belongs to cancer. Local injury or irritation was then cited as a cause, but it was soon realized that this could not account for the persistent malignant action in the deranged cells, for other injuries in cancer patients healed kindly. And so one theory has followed another in a bewildering manner, and still cancer goes on, with a death-rate increasing over twenty-five per cent. since 1900, as shown by the United States mortality tables, fully 90 per cent. of those once affected dying of the disease.

And yet all along the last hundred years some of those who had most knowledge of and experience with cancer, have, from time to time, acknowledged the futility of surgical operations to control the disease, and have insisted that there was some con-

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stitutional state which was the real "precancerous condition." John Abernethy, in 1816, wrote: "There can be no subject which I think more likely to interest the mind of the surgeon than that of an endeavor to amend and alter the state of a cancerous constitution. The best timed and best conducted operation brings with it nothing but disgrace if the diseased propensities of the constitution are active and powerful. It is after an operation that, in my opinion, we are most particularly incited to regulate the constitution, lest the disease should be revived or renewed by its disturbance."

Many will, of course, say that this was written long before the days of modern surgery, and before experience and pathology had demonstrated the necessity of very complete excision of neighboring tissues, and before the modern crusade for very early operation and the removal of "precancerous lesions." But the answer to this is that with all the intelligent and

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magnificent efforts of modern surgery, the mortality from this dread disease, as already mentioned, is steadily rising year by year, even up to the present date. If, moreover, the views to be presented regarding the real nature of cancer, and of "precancerous conditions" be correct, there is no likelihood that the present cry for the instant removal of everything suspected to be cancerous, or precancerous, will greatly stay this persistent increase in the death rate of cancer. For, leaving the basic cause of the malady unchecked, new foci of disease will arise in the same manner as did the original *product* of the wrong blood condition, which was excised.

The limits of a brief paper prevent the quoting of a very large amount of corroborative opinion of eminent surgeons, writing on cancer, which has been presented elsewhere, but brief reference must be made to the views of one whom all respect, and whose knowledge of and experience with cancer none can question.

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Dr. Wm. J. Mayo, in his recent address as President of the American Surgical Association on "The Prophylaxis of Cancer,"* spoke repeatedly, in no uncertain manner, in regard to the probability of there being some constitutional condition back of the local lesion commonly recognized as such. And yet I fear that his clear words alone will make little impression upon the majority of readers, who are so obsessed with the idea of the local nature of cancer, and so possessed by the present craze for surgery. Quite as little impression would probably be made by the remarks of Dr. John B. Murphy, of Chicago, in his presidential address before the American Association of Clinical Surgery. He said that if he were to go back twenty-five years and begin again he would certainly take up medical work rather than surgical, for surgery had about reached its limits, whereas the possibilities of scientific medicine were bound-

* Mayo (*Annals of Surgery*, June, 1914, page 805).

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less. He repeatedly in his clinics has expressed himself most pessimistically in regard to the ultimate results of the surgical treatment of carcinoma, especially in those patients who are fat, and with lax tissue, that is, exhibiting evidences of imperfect metabolism.

The medical profession and the laity have become so infatuated with the value of laboratory and research investigations that clinical medicine has been put too much in the background, and is often discredited, unless supported by the microscope or test-tube. This is especially true in regard to cancer. For while surgeons make the diagnosis and operate largely on clinical grounds, they are very loath to acknowledge the correctness of the diagnosis when cancer has disappeared and remained absent for years under dietetic and medical treatment, even though the diagnosis had previously been made carefully by several physicians and surgeons; for it

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is, of course, manifestly improper to make a biopsy in these cases.

What is the reason for this reluctance? It is because the disease has too often been considered incurable, except by surgical measures, and yet with these alone it makes a steady increase in morbidity and mortality which is truly alarming. Is it not time for the medical profession to recognize that just as tuberculosis mortality has been reduced over 25 per cent. since 1900, by proper feeding, living, and medication, so cancer can be checked in its 25 per cent. *rise* of mortality, in the same period, by measures of like character?

It is quite impossible in the limits of this paper to present in any full manner the grounds for the rational belief in a constitutional nature and origin of cancer, which have been collected in the works already referred to, but a brief mention may be made of the same. Unfortunately for the belief of some, laboratory and re-

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search work have not yet been directed much to the metabolic errors leading up to cancer, but the relatively few studies which have been made have confirmed in a singular manner the results of clinical observation and statistical investigation. From what can be learned, some of the laboratories are now taking up the subject, and there is hope that with their help newer and sounder ideas in regard to cancer will prevail.

As an indication of the faulty metabolism of cancer patients it is to be noted that the urine, under careful volumetric analysis, is rarely if ever that of health; this does not refer to the presence of albumen or sugar, but to the relative proportion of the many other ingredients which compose that excretion, which can be only lightly touched upon. Many writers have reported great errors in the nitrogen partition, and Reid, from the Cancer Research Laboratory of Manchester, England, states that he has found an in-

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crease of amino-acid nitrogen in practically every case of cancer he had examined. This faulty nitrogenous metabolism I have constantly found not only in well-developed cases, but also in very early cases of breast tumors which had been diagnosed as cancer, and also in cases where the cancerous breast had been removed. Blumenthal also states that oxyproteic acids are increased even in very early cancer, and independently of the size of the tumor and degree of cachexia.

The total output of urinary solids is found to be greatly deficient both in patients with the very early beginning of the disease and during its entire course, unless influenced otherwise by medical care. This I have found to be so universally true in dozens of cancer cases, that I have come to look upon it as a feature of the greatest importance in connection with the disease. In a very large number of cases I have had the total urine saved and recorded daily, over long periods, and sam-

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ples thoroughly analyzed every week, or oftener, and the findings have been to me the surest indications for treatment; I refer to the total quantity, the estimation of solids, the volumetric acidity, the urea, chlorides, phosphates, sulphates, and indican. While we have not yet arrived at a point, and probably never will, where any specific changes in the urine can be regarded of great importance in the diagnosis or prognosis of cancer, long observation has convinced me that a very careful volumetric study of this excretion will demonstrate errors of metabolism in the system whose long existence forms one of the "precancerous conditions."

Homely as may seem the observation, I want to call attention to imperfect intestinal action as one of the causes and indications of a "precancerous condition" in the blood which is of importance. Seldom do I find a cancer patient, either with very early or late lesion, who has habitually a normal excretory action of the

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bowels. In most instances there is habitual constipation with an irregular dependence on laxatives, or there is a history of neglect with alternate obstipation with occasional natural relief, often by diarrhea. Long retention of feces in the large intestine tends to fermentation with enormous micrococcic development, whose resulting toxins are absorbed and are an essential element in the perverted nutrition of cancer, a "precancerous condition."

I have been largely quoted as maintaining that meat is the cause of cancer, but that is but a partial and a false conception. Experience and the study and analysis of laboratory work have fully satisfied me that cancer is one of the end-products of faulty metabolism, and this disordered and imperfect metabolism, resulting in some chemico-physiological derangement of the blood-stream, may be produced in many ways. Statistics show clearly that as the consumption of meat

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has increased in various countries, the mortality from cancer has steadily risen; thus, in England the yearly consumption of meat has doubled during the past fifty years, and the mortality from cancer has increased four fold. But it has also been shown that cancer has increased with the consumption of coffee, and also in those who indulge habitually in alcoholic beverages.

These errors in diet, however, are only some of the elements belonging to modern civilization which have contributed to the steady increase in the mortality of a number of chronic ailments whose death-rate is also increasing at an alarming rate. Thus, according to the United States Mortality Statistics, the deaths from apoplexy and Bright's disease have each increased over 15 per cent. from 1900 to 1913, those from organic heart diseases almost 20 per cent., and from cancer over 25 per cent. during the same period. All the first three are recognized to be largely due to

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the incidents of modern civilization, mainly in the line of erroneous eating and drinking, and the conclusion seems almost irresistible that the coincident rise in the cancer death-rate is due to the same cause.

The limits of this paper forbid fuller development of the subject, but the further contributory causes to the poisoned blood stream which produces and nourishes the rampant cells of carcinoma in their destructive course, with all the potentialities of the disease, must be apparent to all. Such are the nervous strain and stress of modern life, often with its hurried eating and imperfect mastication and insalivation, the over-indulgence in wrongly selected, prepared, and combined food and drink, luxurious and indolent habits in many, etc., etc.

The subject is a great one, worthy of profound study, and the only wonder is that there has been such a myopic tendency in scientists and surgeons, who have

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overlooked the broad medical principles which underlie all nutrition, both benign and malignant, and have spent so much time, money, and energy in searching for some specific cause of cancer, and in the surgical removal of the accessible *products* of the disease, while leaving its main and fundamental causes uncared for.

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CHAPTER XIII

CANCER IN RELATION TO BODY ELIMINATION

With the large number of laboratory studies which have been reported concerning blood and urinary changes in cancer, it is surprising that so little attention has been paid to the clinical importance of these findings, and to the relation which body elimination bears to the production and continuance of the disease. The laity as well as the profession have, of late years, become so obsessed with the idea of its purely local character, and so carried away with the craze for surgery, that practically every one thinks only of local operative treatment, by the knife, *x*-ray, radium, etc. And thus it happens that when cancer is suspected or diagnosed, the physician feels helpless and the patient only waits for an operation or death,

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which latter is now acknowledged to follow from the disease in about ninety per cent. of those once affected.

And yet for many years eminent surgeons have time and again acknowledged their inability to cope with cancer, as such, and have contented themselves with attempting to remove the *product of the disease,* namely, the malignant new growth, glands, etc. But little regard has been given thus far to the real cause of this new growth, although infinite labor has been expended in the laboratory to discover its histological characters, mode of development, etc. And all this in spite of the fact which every one must recognize that all growth, whether normal, abnormal, or malignant, depends upon the character of the blood supply, which again derives its quality from the food and drink taken, and the manner in which the metabolism of the system is carried out.

Cancer has too long been regarded as a purely surgical affection, and the surgeon

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as the sole arbiter of the fate of those suffering from this most fatal disease. With the steady rise in its mortality, of over twenty-five per cent. since 1900, as shown by the United States mortality tables, under this line of action, it would seem well for the medical men to take up the study and to endeavor to learn if there is not some basic cause, thus far overlooked, which may be found in the metabolic action of the system, as influenced in many ways, such as by the diet, mode of life, etc. Should we not try to discover why cancer is increasing so greatly with civilized life, while it is rare in some animals and seldom if ever seen in certain aborigines? Literature is full of isolated facts tending to show conclusively that the disease is but an aberrant action of originally normal tissue cells, resulting from a vitiated blood stream.

Space does not permit the full presentation of facts which have been collated elsewhere, nor to do more than mention the

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names of some of the eminent surgeons, there quoted, who have expressed strongly their belief in the constitutional nature of cancer, from erroneous living. Among these are Lambe, Abernethy, Willard Parker, Sir Astley Cooper, Sir James Paget, Esmarck, and Sir Arbuthnot Lane, as also Walshe, in his classical study of cancer. Finally, Dr. William J. Mayo, in his recent president's address before the American Surgical Association, has expressed himself in no uncertain way in regard to there being some constitutional cause leading up to the aberrant action of cells in cancer.

While the exact condition of the blood which excites normal cells to become cancrogenetic and then feeds them in their luxuriant growth, is not capable of demonstration yet, and perhaps never will be, clinical study reveals certain conditions of the system so constantly observed in patients with this disease that there can be little if any doubt that they are contribu-

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tory elements, at least, to the production of malignant disease; these relate to the conditions of faulty metabolism and faulty imperfect body elimination. These errors may be observed, not only in advanced and recurrent cases of cancer, but also in those which are in very early stages; indeed their occurrence in recently forming cancer, and in patients soon after operation forms a strong argument for their causative relation to the disease.

The evidences of imperfect metabolism and faulty body elimination in cancer are found in the condition of the blood, and in excretions from the kidneys, bowels, and skin, and minute and careful study will seldom fail to detect these departures from normal in patients with this disease. It is impossible in this brief article to present any full account of these errors which have been elaborated in the references already given, but a brief mention may be made of some of the most important items.

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The blood is known to present great degenerative changes in cancer, which increase as the disease advances; the hemoglobin content tends constantly to fall and the red cells to exhibit various phases of degeneration. The white cells increase and the proportion of their varieties changes greatly. Unfortunately few if any studies have been made in precancerous conditions of relative health, but it has been recorded that after the surgical removal of a cancerous mass there has been a decided increase of hemoglobin, as I have witnessed, and a high leucocytosis has disappeared, only to return again with the recurrence of the tumor. It is recognized that the cancerous cells themselves secrete a malignant hormone, which aids in increasing the depraved condition of the blood as the cancer advances; for just as the particular and peculiar cells of the various secretory and excretory organs produce a hormone which probably influences other secretions, so all the cells

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of the body, healthy and diseased, produce something of a secretion which has some influence on the economy.

When cancer juice is injected intravenously a marked lymphocytosis arises, which is followed by the appearance of large mast cell myelocytes in the blood. This cancer juice is supposed to autotoxic in cancer patients, and to comprise albuminoids, which being in quantities too great to be quickly neutralized, poison the system, especially the blood and the hematopoietic organs. In cancerous cachexia a diminution of carbonic acid, a constantly diminishing alkalinity, and an increase of acid principles in the blood have been definitely demonstrated, pointing, in all probability, to the existence of an acid intoxication.

The urine in cancer has been investigated by very many observers, and although no definite and specific changes have been as yet found which are surely indicative of the disease, very many de-

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partures from the normal have been reported which are of significance, and under complete volumetric analysis the urine of a subject of cancer is rarely if ever that of health. Many observers agree that there is a disturbance of protein metabolism manifested in the urine, and an increase in colloid nitrogen to more than double the normal amount: there has also been reported an increased elimination of xanthin, oxyproteic acid, and urinary ammonia.

The urea in the urine is almost invariably diminished, often very greatly, as I have verified time and again in many cases. There is also an increase of amino-acid nitrogen, showing that the liver, even when not involved in the disease, is still unable to perform its functions in synthetizing urea.

The urinary secretion will constantly be found to be extremely deficient, both as to the actual quantity passed in twenty-four hours, and in its total solid elimination,

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which, of course, is the true indication as to the efficiency of this excretion. In many cases, even of very early cancer, in which the urinary secretion has been measured and recorded every day for weeks, I have found the elimination of solids often less than one half of the amount called for by the body weight of the patient. As the tumor has melted away under proper dietary and other general treatment, the kidneys have often brought up the removal of waste material to a normal standard. So constantly have I observed this faulty urinary elimination early and late in these subjects, that I cannot but believe that it indicates some defect in metabolism which has a bearing upon the genesis and rebelliousness of cancer.

The action of the bowels, in regard to their true eliminative function, is a more difficult problem to study, and yet from long observation I am convinced that it plays a most important part in connection with cancer. I am not aware of any lab-

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oratory studies which have been made concerning the intestinal discharge in this disease, and my deductions are entirely clinical. Sir Arbuthnot Lane, in one of his lectures on intestinal stasis, has recently emphasized the fact that one of the terminal results of this may be cancer, and the more I have considered the subject, in connection with very many patients, the more the truth of this statement is impressed upon me. It will surprise many to learn how very commonly there is imperfect intestinal elimination in the subjects of cancer, both in the very early, formative stages and throughout the whole course of the disease, which is further accentuated when the time comes for them to take morphine. So commonly have I recorded this, especially in private patients, that I might almost say that is the rule, and time and again I have noticed that if real constipation occurs there is an increase of pain in a cancerous lesion, with more or less of relief from active

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purgation. The constant occurrence of this imperfect intestinal elimination points strongly to the possibility that the toxins produced by the millions of micro-organisms generated through intestinal stasis and fecal putrefaction are the real, incidental cause of cancer. While this is only a clinical conclusion, it is hoped that laboratory research turned in this direction will confirm the finding.

The liver has been shown by many researches to exhibit many departures from normal action in connection with cancer. Reid, from the Cancer Research Laboratory, in Manchester, England, reports that "in cancer the liver, while not involved in the disease, is still unable, for some reason, to perform its functions in synthetizing urea. The organ is functionally injured, no lesions having been found to explain its insufficiency . . . cancerous subjects form proteids which the liver is unable to deal with, so that they are excreted unchanged, or nearly so." Blum-

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enthal states that urobilin is increased in a large proportion of cases of cancer, and others have confirmed hepatic functional disorders in connection with the disease.

The relation of the elimination from the skin to cancer has, of course, never been studied, and perhaps never will be. But there are certain considerations which may be of importance in connection with the general disturbance or failure of elimination in this disease. We know that the skin performs most important functions in connection with regulating the heat of the body. While the relative amount of solids in the sweat is small, the daily total given off by the sudoriferous and sebaceous glands is not inconsiderable, and its character is known to vary considerably under certain conditions, urea and uric acid occurring at times, while cholesterin, an element of importance in cancer, appears in the sebaceous secretion, etc. In cancer the skin is apt to be dry and inactive, and possibly later researches may show that it also

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shares in the deranged metabolic condition connected therewith.

It is realized that the study of cancer along the lines here indicated is yet in its infancy, as it has heretofore been regarded almost wholly from its histological and surgical aspects. The microscope and experimental work on animals have seemed to engross most of the attention, to the relative exclusion of careful clinical observations of the real "precancerous" conditions occurring in the system, which lead up to the disease.

Endocarditis, nephritis, and apoplexy are shown, by the United States mortality tables, to have had a continuous and great rise in their death rate, per 100,000, of late years, and, as already mentioned, cancer has had also a coincident rise in mortality of over twenty-five per cent. since 1900. As the three former diseases are recognized to be largely due to the incidents of modern civilization, mainly in the line of erroneous eating and drinking,

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it would seem reasonable to ascribe cancer to the same cause. Faulty metabolism and imperfect elimination are characteristics of endocarditis, nephritis, and apoplexy, and close and continued observation will show them to be integral features of the bodily condition leading up to and associated with cancer.

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CHAPTER XIV

CANCER AND CIVILIZATION.[1]

Civilization has its advantages and also its disadvantages. All recognize that the mortality from tuberculosis had steadily been increasing under the evil effects of overcrowding and bad sanitation, incident to advancing civilization, until wiser methods have succeeded more recently in arresting its rising progress, and greater care has lessened its death rate immensely, almost 30 per cent., from 1900 to 1916.

Cancer deaths have also long been steadily increasing all over the world, under advancing civilization, as has been often shown. But instead of diminishing, as in the case of tuberculosis, they have increased so surely and steadily of late

[1] Read at the Forty-second Annual Meeting of the American Academy of Medicine, New York City, June 4, 1917.

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that unless something is done to arrest its continued progress, cancer will soon rival the latter disease in its morbidity and mortality.

According to the mortality statistics of the United States, the death rate from tuberculosis in 1910 was 201.9 per 100,000 population, which under most careful medcal supervision has steadily dropped, until in 1916 there were only 141.6 deaths per 100,000 population, or a diminution of over 29.8 per cent.

During the same period the deaths from cancer under solely surgical management have risen from 63 in 1900 to 81.8 in 100,000 living in 1916, or over 28.84 per cent.; that is, almost equal the rate tuberculosis has fallen. Thus the mortality of the two have approached each other in these 15 years by over 58.64 per cent.; and if the same progress in each direction should continue, the death rate from cancer will far outstrip that of tuberculosis in 16 years more.

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The rational deduction of this would seem to be that we should inquire as to whether there is not something wrong in our present conception of cancer and its treatment. This is not the time nor place to discuss this *real cancer problem*, which has been fully met elsewhere, as our interest is as to how far and in what manner modern civilization is responsible for the increase of cancer morbidity and mortality. One will see, however, as we proceed, that all evidence points to the fact that cancer is not a purely local disease, of totally unknown causation, but that there are deep constitutional causes, based largely on some of the baneful influences of civilization, and that it is upon the recognition and rectification of these factors that the true prophylaxis and cure of cancer rest.

Abundant testimony has come from all over the world that cancer is very rare among aborigines, living simple, mainly vegetarian, lives, some of which evidence

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is presented in the volumes referred to, and is amply shown in the admirable treatise by Williams on the "Natural History of Cancer," as also in the remarkable compilation by Hoffman, on "The Mortality from Cancer throughout the World." A few illustrations may be given, largely as presented by Williams and Hoffman, whose intensive studies and abundant references to literature merit close attention.

In Australia cancer is everywhere fairly common among those of white descent . . . but among the aborigines it is so rare as to be almost unknown. In New Zealand the aborigines are seldom affected.

It seems perfectly clear that malignant tumors are of much rarer occurrence in Africa than in any other of the great divisions of the world . . . . and even here it is those of white descent who are the chief sufferers, for the natives are seldom affected.

In the American Continent . . . . this malady is common in all parts of British North America, except among the aborigines.

Among the North American Indians cancer appears to be extremely rare, and

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one careful investigator declares that they are actually nearly immune from the disease.

In Mexico and the Central American communities cancer is decidedly rarer than in the United States.

The negroes in the United States were known to have almost no cancer while living in slavery, when the food and mode of life were simple. But the statistical reports since the Civil War show a steady increase of mortality from malignant disease among them, since they have mingled with whites and eaten their food, with their own natural tendency to gluttony and idleness. In the cities this is most striking, and in New Orleans the rate per 100,000 for negroes in 1914 was actually greater than that of whites.

In Australia cancer is rare among the natives in the interior, but when they mingle with foreigners as servants or employees, and adopt their diet and customs, the disease appears more frequently among them.

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The Polynesians and Melanesians seem to be peculiarly exempt from cancer.

In India all writers agree that cancer is rare among the inhabitants of warmer country districts, where they live largely on rice or millet, with a little milk, and butter, and vegetables. In Ceylon the death rate from cancer was reported as the lowest of any locality in Asia, namely 5.6 persons for 100,000 population.

During a rather extensive trip through the Far East I was unable to see or hear of any cancer, although I met a large number of medical men and made diligent search and inquiry for the same. I visited very many civil military and mission hospitals, with a total of many thousands of patients, and ministering to many millions of population; in Japan, Korea, China, the Philippines, India, Siam, and Egypt I met with the same response, that cancer was rarely seen among these vegetarian natives.

Let us now briefly sketch the steadily

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increasing death rate of cancer as it has been recorded in connection with so-called advancing civilization, for it has been remarked by one investigator of statistics that "the mortality from cancer is in a direct ratio to the intensity of human civilization."

England has long furnished the most accurate statistics of cancer, as of other diseases. In 1840 the cancer death rate was 17.7 per 100,000 living, which rose steadily until in 1905 it was 88.5 per 100,000; the population had only a little more than doubled, while the death from cancer had increased by exactly five fold. In 1913 the mortality from cancer in England and Wales was 94.7 per 100,000 population, and in London it was 114.9 in 1913.

Time does not admit of the full presentation of the increase of cancer deaths in other highly civilized countries, which is abundantly shown in the works of Williams and Hoffman already referred to

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and also in the work of Wolff—*Die Lehre von der Krebskrankheit*, Jena, 1913, *et seq.*; but a few points may be mentioned.

In France, cancer mortality in 1892 was 88 and in 1905 it was 100.2 per 100,000 inhabitants. In Paris it had risen from 97.2 per 100,000 in 1881 to 112.4 in 1912.

In Germany, deaths from cancer increased from 53.5 in 1891 to 90 per 100,000 living in 1912. In Berlin, the increase in the cancer death rate was from 64.6 in 1881 to 132.8 per 100,000 in 1912, that is, had more than doubled in proportion to the living inhabitants.

In Holland, the mortality from cancer rose from 57.6 per 100,000 in 1881 to 109.5 in 1913. In Amsterdam, the rise was from 72.2 to 114.8 in the same period.

In Belgium, the rise in the mortality from cancer was from 59.4 per 100,000 population in 1903 to 71.3 in 1912. In Antwerp, it was from 47.6 in 1896 to 90.9 in 1912; in Brussels, it was from 88.2 per 100,000 living in 1901 to 106.2 in 1912.

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In Italy, the death rate from cancer was 21 per 100,000 population in 1880, and in 1912 it was 64.7. In Rome, it had risen from 79.1 in 1898 to 99.6 in 100,000 population in 1912.

It would be interesting, did time permit, to trace the death rate of cancer in many other localities, to show the relationship of the disease to some of the elements which go to make up what is called modern civilization.

Mention has been made of the steady decline in the mortality from tuberculosis in the United States, and it is most interesting to study its declining mortality in many other regions, in an inverse proportion to the rise of the death rate from cancer; for, as we shall see, the two diseases depend upon two opposite conditions of nutrition developed coincidently with modern civilization.

Time does not permit of the presentation of the evidence which has been so carefully collected by Williams and Hoff-

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man to show the interrelation of tuberculosis and cancer to the conditions of life in various localities, but a careful study of the statistics Williams gives warrants the rather remarkable statement which he makes, as follows:

> Such an examination shows that the cancer mortality is the lowest where the struggle for existence is the hardest, the density of population greatest, the tubercle mortality highest, the birth-rate highest, the average duration of life shortest, the infantile and general mortality highest, and where sanitation is least perfect—in short, among the poor of the industrial classes in our large towns; whereas among the wealthy and well to do—where the standard of health is at its best, and life is easiest, and all conditions of existence are just the reverse of the foregoing, there the cancer mortality is highest.

These are strong words and may be contested by some, but a very careful study of the facts and statistics collected by Williams will convince the impartial student that they are not far from the truth.

All are familiar with the clinical history of tuberculosis. When from unsanitary surroundings, poor nourishment and over-

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work, with deficient oxygen the patient's health fails, there comes a time when a focus of tuberculosis is discovered, and unless checked by a reversal of the conditions inducing the depression of health, the disease proves fatal.

With cancer, however, the clinical history is quite the reverse. The subjects of beginning cancer are commonly seen to be in apparently excellent health; they are often ruddy and blooming in appearance and can hardly be made to believe that the dire disease has actually begun in them. This may be seen even in regard to cancer of internal organs, which is often first suspected and recognized from a steady departure from a previous condition of excellent and robust health.

The two diseases represent exactly two opposite phases of nutrition, both induced by the artificial conditions of existence pertaining to advanced civilization. In the former there is commonly undernourishment with overwork, while in the latter

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there is habitually an overnourishment with underwork. In the period from 1881-1890, Dr. Latham, Register General, found the death rate from cancer in England to be more than twice as great among well-to-do men having no specific occupation, as among occupied males in general, the mortality ratios being 96 for the former as against only about 44 for the latter.

If time permitted, a mass of evidence could be adduced to show that cancer is a disease of "hypernutrition" as Williams remarks. This does not mean that normal nutrition can be overdone if all the contributing elements are correct. But the complex of modern civilization, with all its temptations and errors in regard to eating and drinking, and living, together with the nervous strain felt everywhere, and the absence of sufficient physical exercise, has produced such a disturbance in the normal metabolism and nutrition, that under some slight provocation a heterologous growth of certain tissue cells

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results, with malignant tendencies, instead of the normal, homologous, and stabile structures which compose healthy tissues; and this departure form normal cell action we call cancer.

This is not the time or place to develop the biochemic changes associated with cancer which have been abundantly demonstrated, and which confirm the views expressed. These have been presented more or less fully elsewhere. The fact remains that while cancer is very infrequent among primitive people and among animals living in a state of nature, it has been shown to increase very steadily in morbidity and mortality with the intensity of human civilization, and also among animals as they become domesticated. There can, therefore, be hardly any other conclusion than that this dire disease depends largely upon the conditions developed by or associated with our artificial existence, to which is given the name of "modern civilization."

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CHAPTER XV

CARCINOMA OF THE BUCCAL CAVITY.*

Carcinoma is a malignant disease affecting epithelial structures. Sarcoma is one affecting connective tissue cells. Both are commonly called cancer, and both occur in the oral cavity, although the epithelial disease is many more times frequent than the latter. It will be best to consider them separately, speaking first of epithelial carcinoma. It is especially in regard to this that dentists or oral surgeons have a great responsibility, for they of all others are most apt to see the disease in its inception; and if entirely neglected or wrongly treated, as with nitrate of silver, the chances of an ultimate

* Read before the Harlem Dental Society, October 17, 1918.

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recovery are immeasurably diminished. For all agree that the end results of oral cancer are very discouraging, the disease usually recurring after surgical removal and ending the life of the patient with much misery, except in cancer of the lip when removed very early and well.

According to the Mortality Statistics of the United States there were somewhat fewer deaths from cancer of the oral cavity in 1916 than when I reported them for 1914. In 1914 there were 2270 deaths of this class, or 4.3 per cent of the total deaths from cancer. In 1916 there were 2091 deaths or 3.6 per cent of the total of 58,000 deaths from cancer in the registration area. There was, therefore, a diminution of 178 deaths, or nearly 8 per cent. from cancer of the oral cavity, in spite of a rise of the deaths from cancer in general. It is to be hoped that this diminution in mortality was due to the prevalence of more rational views in regard to the disease: it certainly could not

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be due to more active surgery, under which the mortality of cancer in general has risen nearly 30 per cent. since 1900, according to the United States Mortality Reports.

Of these 2091 deaths from cancer of the buccal cavity, or 2.9 persons per 100,000 of the population, 1730 or 82.75 per cent. were males and 361 or 17.25 females; the males were therefore almost five times the number of females. The locations of the disease are given as follows: cancer of the lip 374, tongue 534, mouth 214, jaw 796, others of this class 173.

It may be interesting to note that in the United States registration area the mortality from this class of cases has increased more than from cancer in any other locality. Thus in 1916 it was 2.9 per 100,000 against 1.6 in 1900, or 81.3 per cent. increase, while the general increase in cancer mortality has been 30 per cent. It is now pretty clearly recog-

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nized that of all those affected with cancer, in various regions, about 90 per cent. die from the disease.

The early recognition of cancer of the buccal cavity is not always easy, even to the expert. But one should always remember the possibilities and seriously consider even small lesions in this locality, for what appears to be an innocent mucous irritation may, under proper conditions of the system, end in a most malignant and serious disease. There is not time, nor is this the occasion to discuss what these conditions of deranged metabolism are which induce cancer; they have been fully presented elsewhere. All are aware of the remarkable healing powers of the tissues of the mouth, as after extraction of teeth, accidental injuries, and various operations, in spite of the great numbers of various micro-organisms found therein, and it seems strange that its tissues should ever take on such malignant action as may occur. This certainly points to some con-

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stitutional alteration of the blood which favors this morbid departure from normal cell action.

Suffice to realize that cancer has its starting point in cells which have been previously healthy, and that long continued irritation is the local cause of the development of the disease in some particular locality. Especial care should therefore be given to any lesion which has persisted for some time, and when in doubt as to the nature of the sore skilled advice should be sought. Cancer is not an entity, a something which has been introduced from outside, an infection; it is not infectious or contagious at any stage, for no surgeon, nurse, or pathologist in contact with cancerous tissues has ever been infected, and laboratory experiments have always failed to inoculate human cancer. Cancer is simply a disordered action of originally normal or healthy cells, which continue to act in a disordered manner, increasing steadily, exercising their

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malignant influence on surrounding tissues, and, unless checked, producing a hormone, or something, which ultimately devitalizes the blood and causes death.

During its various stages epithelial cancer in the oral cavity presents quite different appearances. In its earliest phases it is nothing but an eroded surface, non-inflammatory, discharging but little, and with rather sharp margins. As it progresses the edges harden, and there is some superficial ulceration. Later it attacks deeper tissues, spreading also peripherally and ulcerates more, and the adjoining glands beneath the jaw are enlarged. In early stages there may be little or no discomfort, but as the disease progresses there is lancinating pain and irritation from food. Later the pain may be more distressing, while in recurrent cases, after surgical operation the pain and agony become unbearable and the condition of the patient most pitiable, until death ends the scene.

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There are a number of diseases whose lesions appear in the mouth, which are to be differentiated from epithelial cancer.

1. *Aphthous stomatitis,* or canker sores, are perhaps the most common lesions found in the mouth, and may be important as the possible starting point of cancer, especially if they are "touched up" with nitrate of silver, as is so commonly done, but which should never be done. They are the result of disordered digestion, and some persons have repeated attacks with each recurrent stomach derangement. They are commonly multiple, round or oval, inflammatory in character with superficial ulceration, appearing suddenly with some little soreness. They usually disappear soon after the patient is placed under proper digestive treatment, with a mild mouth wash of bicarbonate of soda and frequent touching of the spots with burnt alum powder, applied with moistened finger. If one or more of them persist it is always well to

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consider the possibility of its being the beginning of a true cancer.

2. *Simple ulceration of the tongue* or buccal cavity should always receive careful attention, and if persistent should be regarded with suspicion as a possible antecedent of cancer. This may be caused by broken, rough or decayed teeth which of course should be most carefully attended to by the dentist. Sometimes they are caused by ill-fitting or rough plates, and in certain instances I have believed that a *red* rubber plate has been the cause, when the trouble has ceased after a black rubber or gold plate has been substituted. Tobacco often plays an important part, as it has been often shown that smoking, especially of a pipe, is largely responsible for the occurrence of cancer of the lip. Alcohol may also have a share. Some such causes for the local appearance of cancer in the mouth seem probable from the fact mentioned that nearly five times as many men as women die

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from oral cancer. In the East, where the practice of chewing a mass composed of betel leaves, tobacco, and lime is customary, by men and women, these malignant lesions are seen in the mouth of both sexes.

3. *Syphilis.* Syphilis is a great disease with many manifestations, and mouth lesions are not uncommon at some period of its course. These are sometimes difficult of absolute diagnosis, though the Wassermann blood test may often be of great help. It is hardly possible here to go over the whole ground of differential diagnosis, but some suggestions may be of value. Syphilis may appear in the mouth as the primary lesion, or chancre, mucous patches, and late gummy lesions.

The primary sore, the seat of infection, according to large statistics, occurs extragenitally, generally in an innocent manner, in something over 5 per cent. of all cases of syphilis. Of these a very considerable proportion occur about the mouth, quite sufficient to make it an ob-

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ject of interest, in this connection, and should never be forgotten. In a study of extra-genital chancre,[1] I was able to collect from literature, 9058 cases of which 1810 were on the lip, and 1544 within the mouth, making a total of 3354 chancres in this region, or 36.6 per cent. of all cases. Of the oral cases 734 are recorded as in the buccal cavity, 307 on the tonsils, 264 in the throat, 157 on the tongue, and 42 on the gums, a considerable number of which were attributed to infection through dental work or instruments. The dentist should never forget the danger of syphilitic infection of himself or patients when unusual lesions are found on the mucous membranes.

The chancre begins as a small abrasion which soon hardens and remains many weeks, giving off a glairy mucous secretion, which, of course, is very contagious. As stated, over one-half of the cases oc-

[1] Bulkley: Syphilis in the Innocent. New York, 1894.

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cur on the lips, generally the lower, as a button-like lesion which is sometimes mistaken for cancer and excised.

Mucous patches are the principle source of danger of infection. These are flat, superficial, rather pearly white, mucous lesions, of which there are generally several, commonly sharply defined and giving off a sticky secretion. In the early stages of syphilis they are intensely contagious and are the cause of most of the cases of syphilitic infection, both genital and extra-genital, a chancre developing in the site of inoculation. Mucous patches may appear at any period of syphilis, but in the very late stages they are less contagious.

The late gummy lesions of syphilis, especially on the tongue often resemble advanced cancer very closely, and indeed are occasionally the starting-point of true cancer. They are very slightly, if at all, contagious.

4. *Leucoplakia.* This consists of a

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rather pearly white, often streaked condition of the mucous membrane, commonly on the inside of the cheeks and tongue which is most rebellious to treatment, and commonly persists a long time; it is to be distinguished from mucous patches and is not at all contagious. It is relatively rarely seen in females, and it is commonly regarded as caused by tobacco; but it also occurs in those who have never used the weed. It should never be "touched up" with nitrate of silver, as this may goad a relative innocent affection into cancer. The main interest of the dentist in this disease is that it is claimed to be a precursor of cancer, and any ulcerative change in it should always be regarded seriously, and the dentist may often be the first to give the warning.

5. *Tubercular lesions* or *Lupus* occasionally resemble cancer in the buccal cavity, but they are very rare. They occur on the tongue and gums, and consist of rather soft, pulpy tissue, a little darker

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than normal, which bleed rather easily, and do not harden up like cancer.

On the lips the dentist may frequently see lesions which may be precursors of cancer, and they may be the first to give warning. Prolonged fissure of the lip is always significant, and cannot be too carefully guarded. Any persistent ulceration, from biting the lips, smoking, or even after a "fever blister," should always be regarded seriously.

Sarcoma. This differs in many respects from the epithelial disease just described, or epithelial cancer, although it also passes under the name of cancer. Although sarcoma is much less frequent than carcinoma, it is of interest to the dentist who may often be consulted about it before it is seen by the surgeon. It is a deep-seated disease, affecting mainly the upper and lower jaw, and the dentist may be first consulted on account of the deep-seated pain, supposedly from the teeth. These are extracted but the pain

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continues and the gum becomes swollen and red. Presently a tolerably definite mass is formed, often at the site of extraction, which is hard on deep pressure, but with swollen, purplish gum tissue over it. Sometimes the tumor first appears at the side of the lower jaw. In the upper jaw it often starts in the antrum of Highmore, and is not seen in the mouth until there has been a considerable growth, even pressing in the vault. Sarcoma has none of the early characteristics of epithelioma, as previously described. It occurs far more frequently in the young than in the old, the reverse of carcinoma.

Malignant disease, carcinoma and sarcoma, is in general much more prevalent in older than younger persons; according to the United States Mortality Statistics there were but 29 deaths, 16 males, and 13 females, below the age of 25, out of a total of 2091 deaths from cancer in this locality. After 25 years of age the number rises steadily and rapidly, and

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the deaths are singularly equal in each of the five years from 55 to 74, namely 263, 282, 278, 269, a total of 1091 deaths, or over half the total number in these twenty years of life against 29 in the first 25 years.

Carcinoma of the buccal cavity is a most important subject, and it is well for dentists to bear it constantly in mind, for the sake of suffering humanity. Their work lies mainly along the line of prevention, for when far advanced it is practically hopeless, almost constantly recurring in an even more terrible form. Rarely do I consent to a surgical operation within the mouth, though in early cancer of the lip a very radical and perfect operation may be successful. Radium has proved of value in some cases, even within the mouth, but a proper and perfectly carried out medical treatment I am confident, from experience, yields infinitely better results than surgery. It is never safe to excise a portion for mi-

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croscopic examination, as this most certainly leads to wide infection and diminishes greatly the possible chances of any advantage from a later radical operation, or of the success of medical treatment.

This is not the place to dwell on the treatment of carcinoma of the oral cavity, for I do not suppose that you undertake such cases. But a few words may be said in regard to the part the dentist may play in averting this dire disease.

As has been intimated, some of the main exciting causes or oral cancer arise from irritating, broken, or decayed teeth, and also from ill-fitting plates. It behooves the dentist, therefore, to search for these and to remedy them effectively. In the case of prolonged irritation or ulceration of the mucous membrane good warning should be given the patient not to neglect it, but to seek and follow at once the proper advice.

In what has been said a warning has been given against the employment of ni-

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trate of silver within the mouth, or to epithelioma anywhere. I cannot urge this too seriously, for by its injudicious application lesions which originally were quite innocent, or would remain harmless, may easily be goaded on to take on malignant action, in systems predisposed thereto. Nitrate of silver cannot cure them, and I regard its use as an almost criminal procedure. All stimulation should be carefully avoided, and all sources of irritation should be removed. Carcinoma is known to develop under conditions of acidity, as in the stomach, large intestines and urinary bladder, and the saliva is generally found to be acid in these cases, and often excessively and persistently so. Only mild mouth washes should be employed, and of these a fairly strong solution of bicarbonate is about the best, soaking the mouth freely with it half an hour before and soon after eating.

It is difficult to cover so large a subject as cancer of the oral cavity in a

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single address, but I trust that enough has been said to invite discussion and to lead to more observation, thought, and study on the subject. If one could know and see some of the frightful ravages in late and recurrent cases of this disease, which caused the death of over 2000 persons in the United States during the year, surely every endeavor would be made, by everyone who had the opportunity, to lessen this suffering and mortality. As the profession and the public become educated as to its predisposing and exciting causes, it is certain that this morbidity and mortality will decrease, even as the deaths from tuberculosis have declined almost 30 per cent. from 1900 to 1916 under careful medical supervision; while those from cancer have risen almost 30 per cent., during the same time, under the care which has heretofore been given. And I am confident that the dentists can contribute no inconsiderable share in bringing about this most desirable result.

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CHAPTER XVI

WHAT SHOULD THE MEDICAL PRACTITIONER DO ABOUT CANCER? *

The answer to the question, "What should the medical practitioner do about cancer?" in accordance with modern custom, seems plain, namely, "Leave it to the surgeon." But why, and is this really the correct thing to do? Or, shall the disease be left to the advertising quacks?

It is now pretty generally believed by the medical profession and the laity that surgery offers the only hope in cancer. However, I hope to show that real cancer, other than epithelioma of the skin—on which latter so many of the arguments for surgery are based—is a medical rath-

* Read before the Litchfield County (Connecticut) Medical Society, July 3, 1917.

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er than a surgical disease, and that with proper and prolonged dietary and medical treatment the results are far better than from surgical intervention. Careful medical attention must be given to the disease if we ever hope to diminish the distressing increase in its morbidity and mortality, as I have many times tried to show.

The reasons why the medical profession and the laity have so universally accepted the dictum that cancer belongs to the domain of surgery are not difficult to discern.

The medical profession, being occupied largely with acute disease, with apparently definite and speedy results, very naturally became discouraged by the unsatisfactory course commonly observed in cancer; as was the case in regard to tuberculosis, until the revival of interest in the latter in recent years, with the well-known beneficial consequences, to be considered later.

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Then the surgeons took up the treatment of cancer, and, as the wounds generally healed well after excision and the immediate results of the operation seemed favorable, little thought seems to have been given to the constant recurrence in subsequent years, for unfavorable statistics are seldom published.

By the brilliant advances in modern surgery along many lines, the laity have become so obsessed by the idea that in many directions its possibilities are limitless that the cancer-patients have constantly yielded themselves to the knife, in the face of the steadily rising mortality of late years. The glamor of surgery and its often spectacular results have quite blinded the eyes of many to the real facts.

The enormous accomplishments with the microscope with reference to the minute structure of the diseased tissues, and the elaborate and extensive work done in animal experimentation, together with the expressed opinion of many laboratory-

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workers that cancer is a local disease, only requiring early extirpation, have turned the thoughts of many away from the homely and practical studies of the human frame in its various departures from health. In this way, relatively little attention has been given to its biochemistry and the deranged activities of the various organs. We have also studied too little the perverted metabolism resulting from the stress and strain of modern life, together with the temptations as to eating and drinking that accompany the existing intensity of present-day civilization.

Cancer being left to the surgeons, it is hardly to be expected that they would incline to any other treatment than that with the knife. Nor would one expect that the surgeon would think along medical lines and investigate metabolic conditions, when the immediate results of operations seem, often, to be so satisfactory. Neither would one expect the surgeon to seek from statistics the unfavorable as-

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pects of this line of treatment, but rather, those from which he would draw encouragement in trying to overcome so dire a disease.

It is to be observed, however, that of late years even the surgeons have extended the time after which cancer can be said to be cured, from a former two years limit, to three, five or more years, while some are candid enough to say that no definite period can be set, for often recurrences have been observed ten, fifteen or twenty years after surgical removal. This agrees with the more rational view of regarding cancer as a constitutional metabolic disease, which may manifest itself anywhere and at any time, whenever the systemic conditions of the individual are suitable for a new development of the malignant new growth to be generated.

What, then, should the general practitioner do with reference to cancer?

Let us look for a moment as to what

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proper medical, dietary, and hygienic treatment has done for tuberculosis, despite the persistence of tubercle-bacilli in affected subjects. In 1900, in the registration area of the United States, 201.9 persons out of each 100,000 population died of tuberculosis. In 1916, under careful medical guidance, the number of these deaths had fallen to 141.6, or a decrease of 60.3 persons per 100,000; in other words, 29.86, or almost 30 per cent.

Now, during the same period, the recorded deaths from cancer had *risen*, under active surgical care, from 63 per 100,000 population, to 81.8, or 29.84 per cent.—almost exactly the same percentage that deaths from tuberculosis had *fallen*. Thus the death rates of the two diseases have approached each other with an amazing regularity almost 60 per cent., so that while in 1900 they were 139.9 points apart, in 1916, they were only 59.8 points apart; at this rate of increase of cancer deaths and decrease in deaths from tuberculosis,

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the former will soon claim more victims per 100,000 population than the latter.

It may be interesting here to mention the latest information in regard to the cancer death rate in New York City, as obtained by a study of the actual figures furnished by the local board of health in its weekly reports. During 1917, there were 4,859 deaths recorded from cancer in New York City (2,143 males and 2,716 females). This total number divided by 365 days gives an average of 13.31 persons dying daily from this cause in New York City! During 1916, there were 4,635 deaths from cancer, or, an average of 12.68 persons per day. Further: in the year 1917, there was a total of 78,467 deaths from all causes in Greater New York, against 77,948 in 1916—an increase of 516, or less than *one* per cent.—whereas the increase of cancer deaths was 224, or over *four and one-half* (4.5) per cent.

What, then, I again ask, should the general practitioner do in regard to cancer?

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Evidently, he should not pursue a plan of treatment that shows a steadily increasing mortality, so that now it is about agreed that 90 per cent. of those once affected with cancer die from it! This would not be tolerated in any other disease.

It is high time, indeed, for the medical man to take up earnestly the study of cancer in its medical relations and to seek to understand its cause and to seek to rectify the systemic errors that lead to the formation of heterologous, malignant tissue, or tumors, instead of to the homologous tissues of health.

The limits of this article do not allow of a discussion of the real nature and cause of cancer and its medical treatment, which have been pretty fully presented elsewhere, but a few practical suggestions may not be out of place.

All nutrition, good and bad, comes from the food and drink taken. Under normal conditions, the cells of the various tissues

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of the body are continually subjected to *catabolism,* "a breaking down of complex bodies of living matter into waste products of simple chemical composition," and *anabolism,* or "the process of assimilation of nutritive matter and its conversion into living substance," these together constituting *metabolism.* In effecting these metabolic changes in the system, the various secretory and excretory organs of the body, including the ductless glands, each perform a certain part, and in health the final results are carried off by the lungs, kidneys, bowels, and skin, in an orderly manner.

In various chronic disorders of the system, from different causes, including errors in eating and drinking, there is some disturbance in the operation of some of the organs, with an altered blood current, and there result various derangements in the tissues, to which derangements we apply, respectively, the names of different diseases, one of these being cancer.

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Cancer is simply the misgrowth of epithelial cells, such as had previously been normally produced—as all pathologists agree. Microscopic studies have demonstrated that within the cells the earliest cancer-genetic change is found in a certain disturbance in the polarity of the cells; also in the relation of the centrosome to the nucleus, whereby the cells multiply, by a deranged karyokinesis, in an irregular, luxurious, and riotous manner, this resulting in what is known as cancer.

Why or just when certain cells begin to take on this heterologous action has not been determined: for no one has ever seen and recognized the very beginnings of the malignant process in true, internal cancer, any more than has been seen and recognized the first inflammatory change in the tissue of the gouty toe, and the like. Suffice to say that there must be a cause; and this has been well defined as a subcatabolism, induced by hyperacidity or

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oxydase deficiency in the surrounding medium or blood plasma, especially through the agency of the myeloid leukocytes, which contain a ferment of the oxydase variety.

All this speculation, though, and much more that has been advanced, really helps us very little in explaining the true pathogenesis of cancer; still, it has its practical bearing with regard to the prophylaxis and treatment of the disease. For oxydase has the property of deamidizing, that is, destroying amidoacids, or the nitrogenous elements, which have been found by many observers to be at fault in cancer patients.

This leads us to the subject of the influence of the nitrogenous diet in the production of cancer, which I have previously shown, statistically, clinically, experimentally, and analytically, to be a predominating element in the causation of this malady. Several observers have confirmed the existence of a faulty splitting

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of nitrogenous elements and an increase of amino-acid nitrogen in those afflicted with cancer.

In view of all this, once more, what should the medical practitioner do with regard to cancer? Of course, it is readily seen that the mere excision of the particular local lesion which has developed somewhere never can eradicate the systemic error that produced it and which probably will cause a recurrence: nor can the *x*-rays or radium-treatments be expected to effect such a change.

All surgeons agree about 50 per cent. of the cases are inoperable when first seen by them. Of the remaining 50 per cent. few claim more than 25 per cent. permanent cure of the general run of cases, excluding those of skin-cancer. This makes only 12.5 per cent. of the total number of cases of true cancer, or about 90 per cent. of deaths, when we consider the number of cases lost sight of or with late recurrences.

It would be quite impossible here to in-

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dicate the exact lines of treatment, dietetic, medicinal, local, and so on, that the medical practitioner should pursue, and which have been more or less detailed elsewhere.

As the surgeons have been so strenuous of late in insisting on the early recognition and treatment of cancerous lesions, so as to medical treatment the best results can, undoubtedly, be secured by the earliest possible detection of the disease. As patients recognize that they can escape the knife and that there is a far greater expectation of cure by means of proper and prolonged medical treatment, they will be less inclined to hide the trouble until too late, and it can be more easily overcome by proper medical care.

People, therefore, should be encouraged to report any questionable signs of the disease at the earliest possible moment, and the case should be minutely investigated and active treatment begun at once, and continued even long after all tangi-

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ble signs have disappeared for some time. For, the dietary and other proper measures looking toward the correction of the faulty metabolism leading to the disease are harmless and often beneficial to those who may not have cancer. In advanced and even inoperable cases, very active treatment may often be of the greatest service, as I have elsewhere shown.

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CHAPTER XVII

CONCLUSIONS AND RESULTS[1]

If the statistics quoted in the preceding pages are correct, and they can be readily proved, if the statements in regard to laboratory researches are authentic, and they can be verified by literature, and if the affirmations of the writer, in this and the preceding volumes, as to results obtained by medical treatment are credible and believed, serious attention should be paid to "the real cancer problem" as presented in the Second Volume. In regard to no other disease has the profession and the laity been so blind as it has been in regard to cancer. But from journalistic literature and personal communications it would seem that the medical portion of the profession is beginning to

[1] Read before the North Western Medical and Surgical Society, New York City, February 19th, 1919.

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see matters in their right light, and the day dawns brighter for the elimination of the fearful morbidity and mortality of cancer.

What are we to conclude from our studies on cancer, as represented in the preceding pages? Is the cancer problem solved completely? By no means; it has only begun to be solved, but there are here indicated the lines along which the best prospects are offered. For it is evident that surgery alone has had its day and has failed. Much more observation and study are needed, both in the laboratory and on patients, but along lines quite different from those heretofore followed. The microscope has revealed about all that is possible in regard to the histological characters of the diseased tissue and the morphological elements of the blood. It is refreshing to observe in the report of the Research Laboratory of the Memorial Hospital, signed by Dr. Ewing, that "The extension of research to clinical questions

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made possible by the increased endowment has not restricted the laboratory studies, but on the contrary has greatly added to their number and importance. The main topic being investigated include the influence of diets upon cancer in lower animals, the chemical changes in the blood and in tumor tissue, etc." It would be well if it had been added "also in patients in the earlier and later stages of cancer,"—but this will undoubtedly follow and unquestionably will be rich in results.

What are we to think of the facts and figures presented in the preceding pages? Can they be ignored? For they have never been refuted in print or in open discussion, although abundant opportunity has been offered in many medical societies and the challenge is still open. With the marvellous diminution in the death rate from tuberculosis under rational treatment, can we refuse to apply the same, properly devised, to cancer, whose mortal-

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ity has risen so alarmingly under the treatment thus far given to it? Can it be anything but a willful ignorance to ignore this line of effort?

In the preceding pages the medical aspect of cancer has been presented in almost every possible light, repeating necessarily much that has appeared in the two previous volumes. Its connection with diet has been developed statistically, experimentally, and clinically. The metabolic changes constantly observed in patients with early and late cancer have been recorded, as also the definite changes in the blood. What is lacking to carry a conviction which shall result in a general change of view, as to its systemic or constitutional character, in place of a purely local nature of the disease? Constant new development of cancerous lesions after surgical removal, metastases, or development of the disease in internal organs, and the later phenomena ending in death, all surely point to something

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more than a local disease. Malignant primary disease in deep organs, the brain, pancreas, kidney, liver, certainly cannot be accounted for by local injury.

The thesis or theory of a systemic or constitutional origin of malignant as well as non-malignant growths is fully sustained by all that is summed up in the one word "nutrition." We know that wrong nutrition accounts for tuberculosis, rickets, obesity, and many complaints, and we know that nutrition depends upon the food and drink taken; and we know that proper nutrition accounts for the marvellous results obtained in tuberculosis, in spite of the continued presence of tubercular bacilli. We know, further, that good or bad nutrition depends also upon the proper or improper action of one or more of the various internal organs, and is also influenced by nervous conditions. What reasonable objection can be raised to the assumption that cancer is also due to errors of nutrition? If the latter is true it

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follows naturally that the exactly proper food and drink, together with correct action of all the internal organs, will prevent and cure cancer.

In the first volume it was remarked that "the test of everything lies in the results obtained. Theories, discussions and arguments are all unavailing unless results show their truth." This phrase was repeated with more force in the second volume. It is now four years since those words were first written, and they can now be repeated again with still greater confidence. For these and former years of further observation and treatment of patients with cancer have abundantly demonstrated the correctness of the thoughts presented, while the study of literature has served only to confirm the views which have been held, and on which practice has been based for thirty and more years.

In some few reviews of the previous

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agnosis of the cases reported was founded on clinical grounds only and was not established by the microscope. In answer to this it may be said that in virtually all the cases recorded then or now the diagnosis had been made previously or confirmed by one or more surgeons, who had urged, and in some instances arranged for, immediate operation. Also it is well known that biopsy before operation is universally condemned, and it would be particularly dangerous in patients who underwent only medical treatment. Further, it is to be remembered that of the vast number of cases operated on the diagnosis before operation is almost invariably clinical.

Reference and further report may be made concerning some of the cases reported in previous volumes, as illustrating and impressing what can be done for cancer by non-surgical measures.

In the first volume eight cases of cancer of the breast were reported, from

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among many others, two of whom were followed, remaining perfectly well, sixteen years after first beginning treatment. The second two cases had been watched and continued perfectly well for nine years under medical treatment alone: that was four years ago, and, traced recently, they remain still well, thirteen years after being first seen. The next three cases were of inoperative recurrent cancer, one of whom showed most remarkable gain during her stay of four months and a half in the New York Skin and Cancer Hospital, the details of which were fully reported. One of the cases, in private practice, was watched almost sixteen months, and when lost sight of, that she might take *x*-rays nearer her home in the country, a very large share of the cutaneous nodules had disappeared, and she had lived comfortably and without pain, and the disease which would have carried her off long before had certainly in a measure been checked. The last case was de-

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scribed as showing how much could be done even in a most hopeless condition. The lady for two years had neglected a diseased breast, until it was the size of half a melon, hard and immovable, with some superficial ulceration and with enormous axillary and supra-clavicular glands and profound cachexia: the trouble had been revealed to no one until the day before her visit, when a physician and surgeon pronounced it hopeless. For seven months under careful treatment she lived comfortably, the breast softening very greatly, and diminishing to about the size of the other, and the glandular swellings becoming about one-half the size. She passed peacefully away with exhaustion and pulmonary oedema, about seven months after being first seen without having taken a particle of morphia or other hypnotic. In all my cases, even in recurrent cancer, it has so rarely been necessary to use these that I can recall hardly any instance where they were employed:

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when under full dietetic and medicinal treatment the element of pain is almost negligible. Opiates check the secretions and excretions, and retard metabolism, and in my experience increase the tendency to an extension of the carcinosis.

In the second volume nine more cases of malignant neoplasm were reported, in which the results of this line of treatment were shown. One was a very remarkable case of sarcoma of the upper jaw, recurrent after operation. The final result of this was a plastic operation to cover the large ulcerative opening which had completely healed in about four months, during which time she had gained from 89½ to 130 pounds, which latter was 10 pounds more than she had ever weighed before. The thick skin graft to cover the opening took at once perfectly, and she remains well two years since I reported the case.

Six cases of cancer of the breast were recorded, three primary and non-operative, and two of recurrent cancer, one

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of whom had been submitted to four operations, and the last one with an immense ulcerative mass of the right side of the chest, which was transferred to my medical service in the hospital by the surgeons, as being absolutely inoperable. This last patient made a splendid fight, for about a year, gaining in flesh, with a blood count raised to 4,110,000, and sleeping well without the opiate she had previously taken. The case was a very difficult one, as the kidneys refused to excrete anywhere near the proper amount of solids required, and she passed away easily a year after entering my service.

Of the other two cases of post-operative cancer of the breast, I may report that the one who had had four operations (case IV) did remarkably well for a while, although when first seen there was a large ulcerating surface over the site of former operations, on the left side, with axillary glands enlarged, and a greatly swollen left arm. Five months later she wrote

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that she felt very well and "friends think that there cannot be very much the matter with me." She made occasional trips from a distant town until about eight months from the first visit when she fell and broke her hip; treatment was then interfered with for some time and she began to go down and passed away about a year after I first saw her. The other recurrent case where both breasts had been removed two years previously, had a great development of cutaneous nodules on both sides of the chest, forming a veritable "cancer en cuirasse." She was treated in the out-patient medical clinic of the hospital, and when I presented her at my lecture clinic about four months later her condition was so changed that there was hardly a trace of the nodules on passing the hand over the surface. She had been working hard all the time and had had no pain since soon after beginning the treatment. She disappeared soon after that and I could not trace her.

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Of the three primary cases, non-operative, in private practice, two seem to have recovered, and the other (Case I) made a most wonderful fight under very adverse circumstances, working very hard and with much family sickness and death. She had a hard mass in the left breast, attached to the skin and with enlarged axillary glands, and had been given six months to live by a surgeon of prominence, if not operated on. The improvement in her general condition and the mass in the breast seemed so good, after the first few months that it appeared as if the disease would yield entirely: she had been to Chicago and back by auto, slept perfectly, had no pain and felt perfectly well. Ten months after her first visit she had a very severe attack of grip, being in bed three weeks in another city, and this, with many weeks neglect of treatment, set her back, and she was lost sight of about fourteen months after she had been given six months to live.

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The other two cases were most satisfactory. One of them, whose breast tumor was diagnosed as cancer by at least four medical men, one of them a prominent surgeon, remained absolutely free from trouble when examined five and a half years after her first call. The other patient (case II) was then reported as perfectly well and free from any breast trouble two years after being first seen; she had been confined of a healthy child two years ago, and was examined on Sept. 23rd, 1918, more than four years after her first visit; there was no trace of the breast tumor and she was in excellent health.

Two cases of totally inoperable cancer of the uterus, as diagnosed by several surgeons, were there reported; both had recovered, as evidenced by the careful examinations of several physicians and surgeons. One of them (case VII) has been under my constant observation and treatment during these two years, travelling

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many times from a far-distant city, and is in as perfect health as could be desired, still weighing more than she did at first, walking much, and a recent examination reports that both of these cases are "free from any evidence of disease."

In the second volume was given a list of the cases of malignant disease, upon which the studies were based, and it is not necessary to refer to these again, nor to detail others of the cases similar to those already reported. Reference will therefore be made to those seen in the two years since its publication, and only those in private practice will be counted, as hospital cases are not nearly as satisfactory as those among the more educated classes in private practice.

A considerable number of these patients were only seen in consultation, or a single time, and a number of them have been treated only for a short period, too short to report definitely concerning them. But there were 21 who were treated suf-

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ficiently long to observe distinct improvement, as recorded on their histories. When we realize the ordinary course of cancer, and that when not improving patients constantly get worse, we cannot ignore a steady gain. And in the light of the cases previously mentioned, we must realize that when one improves and goes up hill in regard to the disease and in general health continuously, one is not likely to go down hill at the same time; and, moreover, if the same conditions and treatment are faithfully persisted in long enough, there is reason to expect that the final result will be favorable, as it has been in so many instances during the many years past.

During the last two years, since the second volume was published I find case histories, more or less complete of 140 new cases of malignant disease affecting different locations. Of these 43 cases were of cutaneous epithelioma, which latter are excluded from our present study,

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as are also a number of cases of suspected cancer and non-malignant tumors. Of the remaining 65 cases there were 39 patients with cancer of the breast, 3 of the uterus, 5 of the stomach, 2 of the rectum, 1 of the bladder, 1 of the kidney, 2 of the prostate, 5 of the buccal cavity, 32 of the lip, 1 of the axilla, and 6 of sarcoma, three of which were in the buccal cavity.

These cases were seen in all stages of the disease, 27 were recurrent after from one to three operations, and 38 were primary cases. With hardly an exception, I believe all the latter had been seen by other medical men, who had made the clinical diagnosis of cancer, and many had been strenuously urged by surgeons of repute to have an immediate operation, as the only hope of saving life. I have elsewhere mentioned the universal belief among the best men that to attempt to take a section for microscopic examination is extremely dangerous in surgical cases, and it would be almost fatal in those

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treated medically. Many of the recurrent cases have experienced the greatest benefit from the line of treatment advocated in these volumes, as indicated in some of those previously reported, and in those to be given. In some instances life has been prolonged far beyond that expected and prognosticated by the surgeon, and with a measure of comfort often most gratifying. As far as I have learned there have been six deaths, but there were probably many more, as a number of those seen in consultation were far advanced. Brief mention may be made of some interesting points in connection with certain primary and secondary cases.

Cancer of the breast. The average age of these 39 patients was just 47, the youngest 27 and the oldest 85: twenty of them were between 40 and 50 years of age when seen. There were 22 married and 17 single. In 24 cases the left breast was affected, in 10 the right breast, both breasts in 3 cases, and unrecorded in one

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case. The duration of the disease before observation varied from a week or two in one instance to six years in one lady aged 59, who had never been operated on; the average was about a year and a half, but there were a number of the primary cases who came quite early, and in them naturally there were the best results. Of these breast cases 19 were recurrent after from one to three operations, or *x*-ray or radium, and 20 were primary, who had never been operated on. I must first mention one additional, very interesting case treated in the medical clinic for cancer at the hospital.

Case I: Mrs. S. J., aged 33, first noticed a lump in the right breast two months previous to her visit, Feb. 28th, 1917. This steadily increased until seen, when it was fully an inch and a half in either direction, in about the median line above the nipple, with sharp rather hard edges, and a small, palpable gland in the axilla: she had been having sharp pains

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radiating from the breast to the axilla. To confirm the diagnosis I called in the surgeon in attendance who at once recognized it as carcinoma and strongly urged an immediate removal, as the only hope, my assistants also agreeing as to the diagnosis. She was extremely constipated, the mouth dry and the saliva acid. She was placed on the usual dietary and medicinal treatment and in two weeks it was recorded that she felt better than for a year. The lump was materially smaller, though the edges were sharp and nodular. There was no pain except in extreme exertion, doing her housework and caring for two children. She was faithful to treatment, generally coming every week, and six months later it was recorded that the lump had markedly diminished, being about an inch in diameter, and very shallow, and with absolutely no pain. Six months still later practically nothing could be felt. About a year or more after her first visit three physicians were told

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that she had had a breast tumor, and all of them feeling the breasts decided that it must have been in the left breast, instead of the right, as there was a slight chronic mastitis there. Very recently a fourth physician made the same mistake. She had been pregnant and gave birth to a dead born child. When seen recently, nearly two years after the first call, there was nothing to be felt in the right breast, but still a little chronic mastitis in the left.

One of my assistants recently reported to me a very similar case, where the lump had disappeared, and after a year the same mistake was made by a doctor examining both breasts, who decided wrongly as to which had been affected.

Case II: Miss C. M. S., aged 35, seen first January 15th, 1917. Six months before she had a severe blow on the right breast which soon enlarged and was painful, it had been poulticed and iodex applied. When first seen there was a lump,

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the size of an English walnut, quite well defined, and with darting pain; no axillary glands were felt, though small enlargements developed two months later, as she had neglected the treatment given. After a few weeks of rigid treatment the breast was softer, with some pain and drawn feeling. Two months later the right breast felt almost the same as the left, though there was still a sharp margin in one place. When last seen, about 18 months after the first, the right breast was normal, but a little caking in the left breast, and she had had some little feeling in both breasts during menstruation. This was a difficult case to handle, as she had much care, work, and trouble keeping a boarding house, with her mother sick at times. She had much gastric disturbance and was much constipated before treatment.

Case III: Miss G. D., aged 45, was under treatment for eczema which had about disappeared, when on January

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22nd, 1917, she called attention to a lump in the left breast which had existed for six months or more. It was just above the nipple, the size of an egg, with sharp edges and some adherence to the skin, with some glandular enlargement and sharp pain occasionally. This patient has been under frequent observation and constant treatment now for almost two years, and while the lump has not wholly disappeared it is not one-half the size, is softer and without the sharp edges, and the glands can hardly be felt: there is rarely any pain, except after much exertion. She keeps her color and weight well, and has been active as an attendant upon an elderly lady. There is every reason to believe that the absorbing process will go on, as she is very faithful to treatment, and that ultimately the trouble will disappear entirely.

Case IV: Mrs. G. K. L., aged 59, received a slight blow on the inner upper quadrant of the left breast, and immedi-

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ately felt a peculiar sensation which passed off, and the lump was not noticed until four years ago. Since then the breast has felt heavy and gradually the mass increased in size, until it was about 3½ inches in diameter, hard and characteristic, when first seen, with some enlarged glands in the axilla. She had been under a partial "Green card" diet for a year. Being placed on very strict diet with medication, at the end of three months the tumor had diminished more than one-half in size, and was much softer, as verified by another physician. She had gained 4 pounds from the first, in good color, and felt better than she had for a long time.

Case V: Miss L. M., aged 55, a recent case, presents points of interest. Fourteen months before her visit, November 4th, 1918, she noticed a small lump in the right breast, which had been kept secret until a week previously. It was painful from the first, the pain increasing as the

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mass grew, until of late it had caused many sleepless nights. When first seen there was a large mass, two or three inches in diameter in the inner upper segment, near the nipple, with a purplish red, protruding area an inch in diameter. The whole breast was tense, and the axillary glands enlarged and painful on handling: there was no supraclavicular adenopathy. The almost immediate relief to many symptoms from a strict vegetarian diet, according to the "green card" previously referred to, and appropriate medical treatment, was surprising. In a week the tenseness of the breast had materially lessened, and the pain was decidedly less. After ten days the lump was less hard and the axillary glands less prominent. A week later the purplish color had almost gone, ichtarol having been applied frequently from the first, and the axillary glands had diminished one-third or more, as verified by a physician who watched the case with me. While the final result with such a large

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tumor cannot be surely foretold, if improvement should be arrested I might have the offending mass removed by the Strobel chemical extirpation, as was done in the case next to be mentioned. This avoids severing blood vessels and lymphatics, which are sealed by the caustics, and the process is not commonly followed by the recurrence so common after removal by the knife.

Case VI: Mrs. L. H., aged 36, came under observation and treatment September 20th, 1918. She had had two children, one 12 years of age, who had been nursed three months, and one six years old. She had much milk in the left breast but the nipple was sore for two weeks and the baby was weaned. Her mother had died of malignant disease of the bladder, at the age of 55. Fourteen months previous to her visit she had first noticed a lump in the left breast, the size of a marble, which had increased gradually, but was supposed to be doing well under

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vegetable diet and various medications, until she had a severe blow on that breast two months before coming for treatment; since that time it had increased rather rapidly, with shooting pains extending down the left arm. When first seen there was a large, hard mass in the upper outer segment of the left breast, 2 or 3 inches in diameter, adherent to the skin, with a moderately reddened area, an inch or so in diameter. The saliva was acid and the urinary excretion insufficient in its solid ingredients. Under active dietary and other treatment it was recorded one month later that the breast was less swollen and less red, but that she still had considerable pain the previous week, during the menstrual period, and that the axillary adenopathy seemed more pronounced, and one or two enlarged supraclavicular glands were found a week later. She had however done well physically, had gained in flesh a little, had good color, slept well without pain, but had

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some darting pains during the day time.

In view of the size of the tumor and her general nervous condition, and the extreme tediousness of its medical removal I decided that it would be wiser to have the breast removed by local caustic treatment, as I have had a number of my cases so treated at the New York Skin and Cancer Hospital by Dr. Strobel, with good results. The process was begun on Oct. 31st, the last application of the plaster being made on November 9th. On account of the difficulty in reaching and removing the enlarged axillary glands, skin grafting was not done until November 26th, when there was still some sloughing to take place in the axilla. The grafts took perfectly over the breast area, giving a smooth, healthy surface, leaving still some raw space in the axilla, to be treated later. The slough there finally separated on December 8th and skin grafting was done December 13th, and has taken well.

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One or two cases may be mentioned to illustrate what can be done for patients where the disease has recurred after one or more surgical removals.

Case VII: Miss H. K., aged 45, first seen December 17th, 1917, had noticed a lump in the right breast in April, 1915; this had been removed surgically within three months, with a good axillary operation the following July 14th. About the middle of June, 1917, she noticed a lump in the left breast, in the outer, lower segment. When seen there was a mass the size of an egg, hard and with some irregular nodosities; the glands along the pectoral muscle were enlarged, with some doubtful axillary adenopathy. She was always constipated and the saliva was acid; the menopause had not yet occurred. Placed on a strict diet and medication she has been very faithful, though living in a distant city, and coming to New York many times up to the present. The tumor is materially smaller and softer, and no

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adenopathy can be detected. When we consider what would ordinarily happen in such a case in a year, and contrast her present condition, when she says that she "feels very well indeed", there is certainly reason to believe in the internal relations of cancer.

Case VIII: Mrs. B. E., aged 49, had the right breast removed, by a very complete axillary operation for adeno-carcinoma, by one of the leading surgeons in New York, on September 27th, 1916. She had never thought of the breast until five or six weeks before the operation, the lump beginning the size of a walnut and growing rapidly in extent, with glandular enlargement. Four months after the operation, January 30th, 1917, she came under observation and treatment with recurrence in the axilla, a swollen arm, paining and aching, and some areas of tenderness. She had long had persistent constipation, depending on cathartics all the time. She had borne three children, 21, 20, and

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13 years of age; the menses had ceased five years. For almost two years she has been a most faithful patient, coming almost weekly from a neighboring town, except during the summers when she was far away, and wrote occasionally. The course of this case has been interesting but not wholly satisfactory, showing how deeply seated is the constitutional error which first manifests itself in a single lesion in the breast, and that the early and perfect removal of this could not arrest its progress.

During these nearly two years with complete and careful carrying out of all dietary and medicinal measures, there have been repeated manifestations of the cancerous dyscrasia, in the way of cutaneous nodules and erythematous patches, with also axillary and supraclavicular adenopathy, and latterly bone involvement in the sternum and cough, indicating internal adenopathy. But, on the other hand, without this constant and faithful

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treatment the disease would undoubtedly have had a lethal ending long ago. Moreover until quite recently she had had no pain to speak of and has never taken a narcotic, and has been active and with a good color. For the last few months she has had much anxiety in regard to her two sons, who are at the front in France, which has had a manifest effect on the disease. During the treatment she has had many applications of the *x*-ray to glandular enlargements, and also latterly radium emanation insertion in some of them, and radium to the sternal lesion by a most competent operator. Although the total results have not yet been satisfactory, there is hope that with the nervous strain removed by the shortly expected return of her sons from the war, she may respond better to further treatment. Latterly, however, the cough and shortness of breath have increased, and on November 29th, 72 ounces of fluid were drawn from the pleura. This exhausted

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her, as learned by letter from her husband, in a distant town, and matters look serious. He adds however, "I am fully convinced that you have added considerable to her life, in comfort and length of days."

Cancer of the uterus. Three cases of cancer of the uterus were recorded, one of which was seen only once in consultation, very far advanced and under large doses of morphine for months. The other two, totally inoperable, and ultimately fatal cases, exhibited in a striking manner the great value of proper medical treatment.

Case IX: Mrs. N. R. M., aged 55, was first seen December 27th, 1917. She had been examined by Dr. John G. Clark, of Philadelphia, and others, with the diagnosis, of inoperable cancer, with not over six months to live. There was a "great ragged crater, extending back to the rectum and forward almost into the bladder, and laterally to the pelvic walls." She was then examined by one of the surgeons

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of the New York Skin and Cancer Hospital, where she was treated, with confirmation of the condition, and a very hopeless prognosis was given, of but few months to live. She had two children, 35 and 30 years of age, and the menses were normal up to their cessation three years ago. But nine months ago she had a profuse watery vaginal discharge and occasional bleedings since, with pain over the pubis. On entering the hospital she had an offensive bloody discharge. She had been habitually constipated and the saliva was found to be very acid.

She was treated, as were the other uterine cases already reported, dietetically and medically, and with a vaginal douche of very hot water, one pint, containing half a teaspoonful of carbolic acid and two of borax, thrown in deeply and strongly with a Davidson's syringe, night and morning, and later also at noon. Within about a month there was a marked improvement in her looks and feelings. The douche came

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away clear, with no blood and only a little cloudy with a few shreds, and with no odor. The urine, which had been scanty, increased to quite a normal amount and character, and the saliva became neutral, she slept well most of the time, without much pain in the pubic region. She was given in addition capsules of the pyrophosphate of iron and her color, weight and vigor improved, so that, in the light of the other cases, it seemed as though she would pull through. But the dullness above the pubis slowly increased, with bowel obstruction and tympanites, the urine became scanty and albuminous, with swollen legs and feet and other signs of serious kidney involvement. The blood, which had been fairly normal showed great degeneration, with only 50 per cent. haemoglobin, 1,350,000 erythrocytes, 13,000 leucocytes, of these 70 per cent. polynuclear, 5 large mononuclear, 50 small mononuclear, 4 transitional and 1 eosiniphile. She finally passed peacefully away

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in coma on August 16th without requiring or having taken a particle of morphia or other hypnotic, except a small dose of chloral and bromide occasionally at night when sleepless. She had some sciatic pain which was helped by the free use of aspirin.

When we consider the course of the disease in this patient, with her constant hopefulness and comfort during these eight months, instead of six months or less, as compared with the agony often suffered, especially in cases recurrent after operation, and the amount of morphia often taken, there is reason for believing in the value of the proper constitutional treatment of cancer. With the enormous infiltration of the abdominal viscera, and the great ulceration, the case was, of course, hopeless from the beginning.

Case X: Mrs. T. F. V., aged 64, first noticed bleeding from the vagina three months before her first visit, November 23rd, 1917. She had had pain in the back

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a little while before, and some bleeding every two weeks, and for a day or two at a time. She had not felt well since June, and had lost twenty pounds, weighing 107 when first seen. She had been examined by a surgeon two weeks before, coming from Maine and pronounced to have inoperable uterine cancer. She was examined here, by a gynaecologist, who found extensive cauliflour ulceration of the cervix, with the uterus of great size. She had had six children, 38 to 28 years of age, and the menses has ceased twenty years ago. She was always constipated, the urine had always been scanty, and the saliva was very acid. The urine was of low specific gravity, contained a moderate amount of albumen, and the urea low. Under careful dietetic and medical treatment, with the same vaginal douche as in the preceding case, she improved greatly, gained two pounds and a half in weight, and "felt like a different person," within a month, coming frequently to the office.

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She had relatively little pain, never requiring an opiate, and two months from the first it was recorded that she "felt freer from pain during the preceding week than for weeks or months." The douche came clear, and without blood. The urine continued of low specific gravity, but occasionally without albumen, and the saliva continued very acid. Two weeks later she had a strange attack, with suppression of urine, and she became somewhat irrational, and was moved to the hospital, as she could not be well cared for in a boarding house. This condition continued for a while, but two weeks later she was perfectly rational and wanted to go to her home in Maine; she said that she had no pain. She was taken home and died peacefully 25 hours after reaching there, on March 21st, 1918. She thus lived almost four months in comparative comfort; not taking a particle of morphine or other hypnotic, and died without pain, sleeping peacefully, as reported by letter. The

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case was of course hopeless from the beginning.

Cancer of the stomach. Five cases were recorded, all males, aged 65, 58, 56, 44, and 43, but only one of them is reported; one was seen only once in consultation, far advanced, who died not long afterwards.

Case XI: W. B., aged 56, had been sickly and not working for a year before his first visit, August 30, 1916, and had seen many physicians and surgeons, all of whom diagnosed the trouble as cancer of the stomach. He had had pain in the epigastrium for a long time, with swelling and hardness. On examination there was dullness on percussion over the pyloric region, and a mass could be felt. He had chronic constipation with coated tongue, and was very weak, having lost many pounds. Placed on a rigid diet and strict regulations as to mastication and living, with medication, he improved greatly, looking and feeling much better at the

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the few visits he made from another city. Seven months later I learned from his brother-in-law, who had brought him, that the patient was very well, and was working again. I realize that the diagnosis is very difficult in these cases, and that he may not have had real cancer, but his whole appearance and the clinical symptoms, with his cancerous cachexia, loss of weight, etc., indicated the probable correctness of the diagnosis made by several medical men, and the results certainly were most satisfactory.

Cancer of the rectum. Two cases were recorded, one a woman aged 55 and a man aged 42, the latter only being treated. The former had had an artificial anus made, and subsequently intestinal anastomosis for inoperable cancer of the rectum, and was seen only once.

Case XII: Mr. R. G., aged 42, came for treatment June 13, 1917. Two and a half years before he had had an operation for ulcer of the stomach, and had had no

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trouble until November, 1916, when he was given Russian oil for obstinate constipation. About a month before his visit he was seen by a surgeon of prominence, who diagnosed cancer of the rectum, verified by microscopic findings, and advised an operation, which he refused. When seen he was rather thin and haggard, having lost a good many pounds, pulse 92 and poor, tongue badly coated. His sleep was disturbed by having to get up three or four times for small thready, bowel movements, of which he had from twelve to fifteen in the 24 hours. On examination there were no external signs of disease, and digital examination revealed little, the disease being higher up. Under dietary and other treatment the bowel movements were soon reduced to four in the twenty-four hours, one of them at night, but still watery and generally with some blood, but no pain. Six months later he was having often formed movements of good size and had been better

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in every way the preceding month than for a year, with only slight pain in the rectum occasionally: there was still a little blood passed, although on April 12th, after an absence of a month, it was recorded that there was no blood in the passage. When last seen, nearly a year from the first, he was in about the same condition, he had been steadily at work in a dry goods house all the time while under treatment. In view of the unsatisfactory results commonly obtained by operation and the distressing condition of a patient after colostomy, the results in this case may be considered satisfactory.

Cancer of the prostate. Two cases were seen, aged 74 and 54; one was seen only once.

Case XII: B. S., aged 54, had long had enlarged prostate, with frequent urination day and night. He had lost flesh, especially during the six months preceding his first visit, October 26th, 1917. He had then an earthy, cachectic look, was thin

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and depressed. On examination by a surgeon the prostate was found enlarged and the inguinal glands on both sides were greatly affected, forming great masses visible to the eye, there being no lesions on the penis. Under the "green card" diet and medication there was a great change in a few weeks. The patient felt and looked much better. The glands in the groins had subsided greatly, and shortly thereafter they had quite disappeared, the cachexia was gone, and he had not an ache or a pain. He was lost sight of; and although written to did not respond, but I learned by the daily paper that he died suddenly. As in cancer of the stomach a clinical diagnosis is often difficult, but such a result of the treatment was certainly satisfactory and preferable to surgical interference, with all its uncertainties.

Cancer of the kidney: One case has been under my constant care for two years and the results illustrate well the value of continued internal treatment.

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Case XIV: Mr. H. H. B., aged 55, had been indisposed for a year, his color was bad, and work difficult to accomplish. On August 25th, 1916, he passed blood in the urine, and the next day red blood, and also coagulated, with much pain in the back. The *x*-ray was said to show nothing, nor cystocopy, except blood from the right kidney. This latter was removed on September 1st, in another city, and found to be enlarged four times in size, weighing over two pounds, and shown to be cancerous miscroscopically. He made a good recovery, and had no pain while in bed, three weeks, but on walking had pain in the left side, increasing toward afternoon and rendering life miserable up to his coming under treatment January 30th, 1917. The pain generally ceased on lying down at night. He weighed 173½ pounds, and was a large eater of meat and very fond of milk and eggs; he had never had any restriction of diet, nor directions or other treatment of any kind.

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Under strict vegetarian diet and varied treatment at frequent consultations, with voluminous notes, he has for two years been able to do his work, has gained 14½ pounds in weight, and for long periods has been free from pain, although there are times when he has pain over the left kidney. Recent notes show that he was "doing normal work" and "stands well the hardest strain," "felt better than for years" and "never had so good a color or circulation." The urine has been watched, measured daily all the time, and frequently analyzed volumetrically and has commonly averaged over 50 ounces daily; the various ingredients are generally about normal, except that the urea is low, owing to the vegetarian diet. He has been, and I believe will be very faithful to treatment, which has certainly prolonged his life and usefulness, and given great comfort and ease. How long it will be necessary to continue active treatment it is difficult to say; a relapse to

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his former method of living and entire neglect of protective treatment might naturally be expected to again induce a serious involvement of the remaining kidney. He has, of course, never take a particle of morphine or other hypnotic, the pains occurring at times being largely relieved by the frequent use of aspirin.

Cancer of the bladder. One case of this has been under prolonged treatment with eminently satisfactory results.

Case XV: Mr. G. W. H., aged 68, had been under my care for a number of years, for various difficulties, when on March 27th, 1914, he brought two specimens of urine with clots of blood and a considerable amount of albumen in the evening sample, and was seen the next day. There had been no especial pain in the back, nor on passing urine, which had cleared since. Three days later he was again passing blood and was feeling weak, and thought he had lost two pounds in weight. He had to urinate every two

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hours, twice at night; the blood appeared mainly at the end of the urination. Blood pressure 160, systolic. On April 2nd he was cystoscoped by Dr. A. R. Stevens. The bladder muscosa was found to be normal except near the left urethral orifice. Just above this there was a small nodular, well defined, sessile mass, with small blood vessels over its surface, pretty typical of carcinoma of the bladder wall. Radical excision was advised, or else fulguration. Declining these very positively he was treated medically for a month, when he yielded and on May 7th Dr. Stevens treated the lesion by fulguration, which was repeated on May 22nd. On August 5th, there was some recurrence seen, in a slight crescentic mass, which was destroyed by high frequency current, with again a slight operation on August 10th. On October 22nd he was cystoscoped and no sign of recurrence was seen, only a scar. On February 23rd, 1916, there was a small regrowth, not one-half

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the former size, which was treated with the high frequency current, and again slightly on March 2nd. He has been repeatedly cystoscoped since that date, up to the present time, by three urologists, and there are no signs of recurrence now nearly five years from the first symptoms observed.

The patient has been under constant medical treatment, with strict diet all this time, for various troubles attending high blood pressure which has reached 200 systolic, but is commonly kept under control to about 150 systolic and 80 diastolic. On December 22nd, 1916, Dr. Stevens found a "large, elastic prostate (not carcinoma)," which, however, seemed to cause no special symptoms until December 7th, 1917, when blood clots were found in the urine, which have continued to appear much of the time ever since; these clots show only blood and fibrin, and no evidence of new growth tissue as reported by Dr. Jessup. On repeated cystoscopic

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examinations no trace of the original or any other trouble in the bladder has been found, but "an adenomatous hypertrophy of the prostate and a slight bleeding from the prostatic portion of the urethra." This was confirmed by two other urologists. During all this time under strict regimen and varied medication he has maintained his usual health, color, and weight, and pursued his usual business.

Cancer of the buccal cavity. Five cases were observed, four males, aged 47, 48, 59, and 72, and one female aged 44: of these two were of the right upper jaw (not sarcoma), two of the tongue and one of the tonsil; there were also three cases of sarcoma, two of the left upper jaw and one of the right lower jaw, besides two other cases of sarcoma located elsewhere. The cases of carcinoma of the jaw were seen only in consultation, one was a terrific post-operative case for which little or nothing could be done.

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The sarcoma cases were also seen in consultation, and one was advised to see Dr. Janeway, for radium treatment. The female with cancer of the tongue was seen once in consultation, the other case, though rather recent, and also the one with cancer of the tonsil are worthy of mention.

Case XVI: Mr. K. M. A., aged 59, seen September 11th, 1918, first noticed an irritation of the right side of the tongue, from a broken tooth, in May, and on May 11th, it was operated on with a knife and healed so that he went to work on May 20th, with no pain for three weeks. It then began to ulcerate and a knife was again used and it was cauterized on August 5th, and he left the hospital August 11th, five weeks before his visit; since that time the trouble has been increasing rapidly, until when first seen the tongue was enormous, filling the buccal cavity, with a large ulcerative, hard patch, an inch and more on the side with sharp, hard

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edges: the submaxillary glands were very large, hard, and matted together, and the case was considered wholly inoperable by the surgeons whom he had seen. He had always smoked much, but took little alcohol, coffee or tea. The saliva was very acid, the urine contained much indican, also oxalates and phosphates.

Being placed on the green card diet, with absolutely no smoking, alcohol, coffee or tea, and with the mixture of acetate of potassa, nux vomica, cascara, and extract of rumex, the improvement began almost at once. He also used a mouth wash of a saturated solution of bicarbonate of soda, diluted one-half, held in the mouth some minutes, a quarter of an hour before and also after taking food. He could take only liquid food, having great difficulty in swallowing.

By the end of three months the change was most remarkable. The ulceration had ceased at the side of the tongue which had greatly diminished in size, though

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still hard. He swallowed much better, the jaws opened much wider and he could chew some, and the glands beneath the jaw were smaller and less adherent and movable, as was verified by two physicians. He remarked the "great improvement" in his condition and his wife said "the change from the first is marvellous." He still complained of some pain in the neck, running up to the head, but he has never taken any morphine or anodyne. When seen later, very recently, the improvement was still more marked. It is, of course, too early to claim a cure, but with continued proper treatment, of various kinds, there is every reason to believe that the progress toward that end will continue. This case illustrates well the harm from curetting and cauterization, which stimulated an ordinarily slight ulcerative process from a rough tooth into a malignant disease.

Case XVII: Mr. F. F., aged 72, came under observation and treatment on Octo-

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ber 2nd, 1918. For three months he had felt a pressure of something wrong on the right side of the throat, and on September 3rd, had had some sort of an operation from within, the nature of which could not be determined. He had seen many physicians and surgeons who advised a complete operation from the outside, which was refused. Wassermann had been taken and found negative. On examination the right tonsil was found to be the seat of an ulcerative process, half an inch or more in diameter, very hard to the feel, with sharply defined hard edges, and considerable inflammatory action of the surrounding parts, reaching over almost to the left tonsil. The glands beneath the right jaw were greatly enlarged, the size of a large walnut, but rather movable. The saliva was very acid. He had been in the habit of taking beer twice daily, and smoking, which, of course, were stopped. Placed on a rigid vegetarian diet, with the same mixture as

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in many other cases, and the soda gargle, held in the throat a good while before and after each meal, he began to improve from the first. Within two months the ulceration had about ceased and much of the adjoining inflammatory action subsided. The hardness had largely disappeared, though the edge was still hard. He remarked, "I feel all right and have nothing to complain of." The gland in the neck had diminished to the size of a small almond. A little later it was recorded that there was still slight marginal hardness, but superficial, in the diseased area, the gland was still smaller and freely movable, and he said that he felt "perfectly well," "find no complaint of any kind."

Cancer of the lip. Many cases of cancer of the lip have been under observation during past years, varying gently in their severity. Excision has been advised and practiced in a considerable number, and certain earlier cases have been treated

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medically with perfect success. I have never felt that the *x*-ray was to be relied on, though good results have been reported from this and from radium, but the percentage of even apparent cures is not very large, nor ultimate results observed over a long period. In certain relatively small lesions of cancer of the lip careful medical treatment, accurately carried out long enough, is certainly capable of producing a clinical cure, as I have repeatedly observed. For the trouble is really a local affair, due to prolonged irritation of the mucous membrane, in those subject to certain constitutional conditions, and the altered tissue resumes its normal condition when properly handled, and the cancerous proclivity overcome.

Of 32 cases, some dating back 10 years or more, 9 at least were clinically cured, and many others so greatly improved when last seen that the ultimate result was probably good. One man, a butcher, eating very much meat, and weighing 215

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pounds, had a very characteristic epithelioma, about ¾ inch long on the right side of the lower lip, existing about a year. In six months it was absolutely well, and a year or so afterward when another patient looked him up he had forgotten even the location of the trouble. A single case may be reported more in full.

Case XVIII: Mr. W. H. N., an unusually intelligent gentleman, aged 45, from a distant city, had a slowly growing epithelioma of the lower lip for several months, for which an immediate radical opration was insisted on by several prominent surgeons and friends.

When first seen, Feb. 6th, 1917, there was an oval epitheliomatous lesion, just to the left of the median line, about half an inch in diameter, and raised a line or so. He was placed on a rigid "green card" diet, with no smoking, liquor or beer. The surface was kept covered, night and day, with an ointment (℞ Ichthyol ℥ss Zinci Oleat ℥ss Unquent. Aquæ Rosæ

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℥1), spread on the thinnest possible portion of absorbent cotton, which adhered perfectly over the lesion. This was replaced twice a day or oftener. In a week there was a decided change, the mass being much softer, though with still decided induration. The ointment was changed from time to time, with occasionally one per cent. of powdered salicylic or pyrogallic acid added, reverting at times to the first ointment, when these seemed a trifle irritating. Nine months later he kindly presented himself at my lecture at the New York Skin and Cancer Hospital, and himself gave the physicians present a remarkable lecture on the disease and its treatment, stating that he was a Harvard graduate, and had studied medicine a while, and knew what he was talking about, urging them seriously to carry out this treatment. A year later he wrote enthusiastically about his case. The secret of success lies in the absolute protection of the diseased surface, night

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and day, with the closely applied soothing and alterative ointment, spread thickly on the thinnest possible layer of absorbent cotton, pressed closely on; this, of course, is accompanied with other proper general treatment for the cancerous state.

In this and the preceding volumes are recorded over thirty cases of cancer, from among many others, in which the benefit of a properly regulated medical treatment was clearly manifest. Some of the earlier breast cases had been followed from 13 to 16 years, remaining perfectly well without operation; others well from three to five years; and the two uterine cases, reported in the second volume remain well for almost three years, with no recurrence, being still under treatment. The more recent cases have showed such steady improvement that it can hardly be doubted but that, if they remain still faithful to treatment, they will ultimately recover. The fatal cases were mostly

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post-operative, but they also exhibited strikingly the benefits from this treatment, in prolongation of life and great comfort. As far as I can learn from my notes none of the patients required or received any anodyne, from soon after the time that they began treatment. When all this compared with the ordinary course of cancer cases it does seem that we are on the right track concerning the treatment of cancer.

It is not claimed that the goal has been reached, or that the details of this line of treatment are complete. Laboratory and clinical study on the blood plasma, as well as on the secretions and excretions will undoubtedly elaborate more perfectly the best plan of dietary and other treatment, and as other observers follow this plan of treatment there will doubtless be found a gradual reduction in the mortality of cancer, greater even than has occurred in New York City during 1918. It

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is surely to be hoped that as "The real Cancer Problem" is fully solved there will be, under proper constitutional treatment, the same lowering of mortality that has occurred in tuberculosis under wise medical treatment. And as correct views of living prevail the morbidity of cancer will decrease with its mortality.

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INDEX

Abernethy on a constitutional cause of cancer, 62
Aborigines, cancer rare in, 85, 67, 233, 279
Acidity of saliva in cancer, 96, 228, 305
Adenoma, removal of, followed by cancer, 114
Aebli on untreated cancer, 235
Alcohol, influence on cancer, 88
Australia, cancer in, 279

Belgium, cancer in, 283
Bio-chemistry of cancer, 208
Bladder, cancer of the, 365
Blood, changes in cancer, 92, 170, 204, 225, 267
Bowels, elimination from, in cancer, 110, 164, 178, 270
Breast, cancer of, 115, 327, 338
Buccal cavity, cancer of, 289, 300, 368
Butter, value in cancer, 176

Cancer and body elimination, 262
and civilization, 128, 200, 276
and coffee, 89, 233
Cancer and diet, 33, 35, 40, 76, 121, 144, 150, 201, 239
and heredity, 219
and lymphatics, 205
and meat, 88, 128, 146, 232, 258
and metabolism, 32, 91, 205
and metastasis, 205
and nutrition, 202, 314, 325
and occupation, 287
and the medical practitioner, 307
and tuberculosis, 26, 34, 59, 284, 285
as a non-surgical disease, 25
bio-chemistry of, 208
caused by intestinal stasis, 111, 164, 178, 270
changes in the blood in, 92, 170, 204, 225, 267
clinical findings in, 190
constipation, cause of, 111, 164, 178, 270
constitutional nature of, 18
cure of, medically, 336
cures, 64
death rate compared to tuberculosis, 26, 34, 284

Digitized by Google

Cancer, death rate in 1917, in New York City, 41
death rate in 1918, in New York City, 49
death rate of, in the world, 81
derangement of liver in, 272
dietetic treatment of, 144, 151
diet most important in, 239
due to faulty metabolism, 33
early, health of patients with, 224
early medical treatment of, 319
ethnological relation of, 200
families, 220
from a medical standpoint, 53
genetic changes in cells, 316
geographical relations of, 200
harm from nitrate of silver, 304
in Australia, 279
in Belgium, 283
in England, 282
in France, 283
in Germany, 283
in Holland, 283
in Italy, 284
influence of alcohol on, 88
influence of coffee on, 89, 288
Cancer, influence of meat on, 88, 146, 232, 258
intestinal stasis cause of 111, 164, 178, 270
juice, 268
laboratory findings, negative, 29, 185
positive, 31, 187
malignant hormone secreted by, 267
meat eating cause of, 88, 146, 232, 258
medical aspects of, 71
treatment of, 144, 211, 242
nitrogen partition in, 228
non-surgical treatment of, 169
nosological relations of, 198
not altogether a disease of old age, 30
not a surgical disease, 25
not contagious, 29
not from occupation, 30
not hereditary, 29
not parasitic, 29
not wholly due to local injury, 29
of the bladder, 366
of the breast, 115, 327, 338
of the buccal cavity, 288, 369
of the kidney, 363
of the lip, 374

Digitized by Google

Cancer of the prostate, 362
of the rectum, 360
of the stomach, 359
of the tonsil, 372
of the uterus, 334, 353
only the product of previous systemic disease, 126
pathology, teachings of, 181
patience in medical treatment of, 238
perseverance in medical treatment of, 238
problem not fully solved yet, 322
prophylaxis of, 72, 102, 106, 161, 236, 252
product of metabolic error, 181
rarity of, in aborigines, 35, 67, 233, 279
rarity of in vegetarian countries, 130, 234, 281
results of medical treatment, 321
rice inhibiting, 231
saliva acid in 96, 228, 305
skin elimination in, 273
study of patients with, 208
surgical aspects of, 74, 309
time of cure of, 311
ultimate death rate from, 25, 54
untreated, 285
Cancer, urine in, 94, 111, 165, 177, 227, 269
vegetarian diet in, 121, 151, 161
report of, 115, 327, 339
Chart of cancer death rate, 58
Civilization and cancer, 201, 276
Clinical findings in cancer, 190, 286
Coffee, influence in cancer, 89, 233
Cohnheim, embryonic rests, 216
Conclusions and results, 321
Constipation a cause of cancer, 111, 164, 178, 270
Constitutional nature of cancer, 18, 210, 229
Contagious, cancer is not, 29
Cooper, Astley, on intestinal cause of cancer, 79
Cure of cancer, medically, 336
teachings of pathology, 181
time of, 311

Death rate of cancer in 1917, New York City, 41
of cancer in 1918, New ork City, 49
of cancer in the United States, chart, 58

Digitized by Google

Death rate of cancer in the world, 81
ultimate, from cancer 25, 54
Diet and cancer, 33, 35, 40, 76, 121, 144, 150, 201, 239
and growth, 230
effect in cancer, 33, 35, 40, 121, 144, 150, 201, 239
Dietetic treatment of cancer, 144
Diet for cancer, 151
most important in cancer, 239
relation to cancer, 121

Early medical treatment of cancer, 319
Elimination and cancer, 262
Embryonic rests, 126, 216
End results in cancer, 54
England, cancer in, 282
Ethnological relations of cancer, 200
Epithelioma, death rate of, 27, 196

Far East, rarity of cancer in, 234, 281
France, cancer in, 283

Geographical relations of cancer, 200
Germany, cancer in, 283

Health of patients with early cancer, 224
Heredity, insignificant in cancer, 29, 219
Holland, cancer in, 283
Hormone, malignant, secreted by cancer, 33, 160, 267

Ignored, evidence cannot be, 323
Indians, rarity of cancer in, 279
Intestinal stasis, cause of cancer, 111, 164, 178, 270
Italy, cancer in, 284

Kidney, cancer of, 363

Laboratory findings negative in cancer, 29, 185
Lambe on internal cause of cancer, 77
Lane, Sir Arbuthnot, on intestinal stasis cause of cancer, 111
Lip, cancer of the, 374
Liver, derangement of, in cancer, 272
Lymphatics and cancer, 205

Mayo, W. J., prophylaxis of cancer, 252
on internal cause of cancer, 71, 229
Meat and cancer, 88, 128, 146, 232, 258
not the only cause of cancer, 258

Digitized by Google

Medical aspects of cancer, 74
standpoint of cancer, 58
treatment, cases illustrative of, 115, 327, 339
treatment of cancer, results of, 321
practitioner and cancer, 307
Medicinal treatment of cancer, 144, 211, 242
Metabolism and cancer, 32, 205
Metastasis and cancer, 205
Mexico, rarity of cancer in, 280
Morbid tissue growth, 222
Mouth, cancer of, 289
Murphy, John B., pessimism of, 252
Negative results of research, 29, 30, 185
Nervous strain and cancer, 90
New York City, cancer death rate, in 1917, 1918, 41, 49
Nitrate of silver, harmful in cancer, 305
Nitrogenous metabolism, faulty in cancer, 227, 255
Normal tissue growth, 221
Non-surgical disease, cancer a, 25
treatment of cancer, 169
Nosological relations of cancer, 198
Nutrition and cancer, 202, 314, 325
Occupation, influence in cancer, 30, 287
Old age and cancer, 30
Oral cavity, cancer of, 289
Paget, Sir James, on constitutional nature of cancer, 79
Parasitic, cancer is not, 29
Parker, Willard, on internal cause of cancer, 78
Pathology, teachings of, in cancer, 181
Patience in medical treatment of cancer, 238
Perseverance in medical treatment of cancer, 238
Plasma of blood, relation of, to cancer, 171, 204
Plea for the rational treatment of cancer, 15
Positive results of research, 31, 187
Precancerous conditions, 248
Problem, cancer, not fully solved yet, 322
Product, cancer, of metabolic error, 182
Prophylaxis of cancer, 72 102, 106, 161, 236 252

Digitized by Google

Prostate, cancer of the 362
Radium in cancer, 55, 76, 209, 303
Real cancer problem, 321
Rectum, cancer of, 360
Report of cases, 115, 327, 339
Results of medical treatment of cancer, 244, 321
Rice inhibiting cancer, 231

Saliva acid in cancer, 96, 228, 305
Sarcoma of buccal cavity, 301
Sarcoma of jaw, 330
Serum therapy of cancer, 109
Skin, elimination from, in cancer, 273
Spontaneous disappearance of cancer, 36
Stasis, intestinal, cause of cancer, 111, 164, 178, 270
Stomach, cancer of, 359
Study of cancer patients, 157, 206, 238, 241
Sulphur partition, deranged in cancer, 228
Surgical aspect of cancer, 54, 74, 309, 318
Sweat, elimination of, in cancer, 273
Syphilis of buccal cavity, 297

Time of cure of cancer, 311
Tonsil, cancer of the, 372
Traumatic, cancer is not wholly, 29
Treatment, medical, of cancer, 211
Tuberculosis, death rate compared to cancer, 26, 34, 59, 284, 285

Ultimate death rate of cancer, 25, 54
Urea in cancer, 269
United States, cancer death rate in, 58
Urine in cancer, 94, 111, 165, 177, 227, 269
Uterus, cancer of, 334, 353

Vegetarian diet in cancer, 110, 160

Walshe, constitutional nature of cancer, 78
Williams on tumor formation, 223
World, cancer death rate in, 81

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